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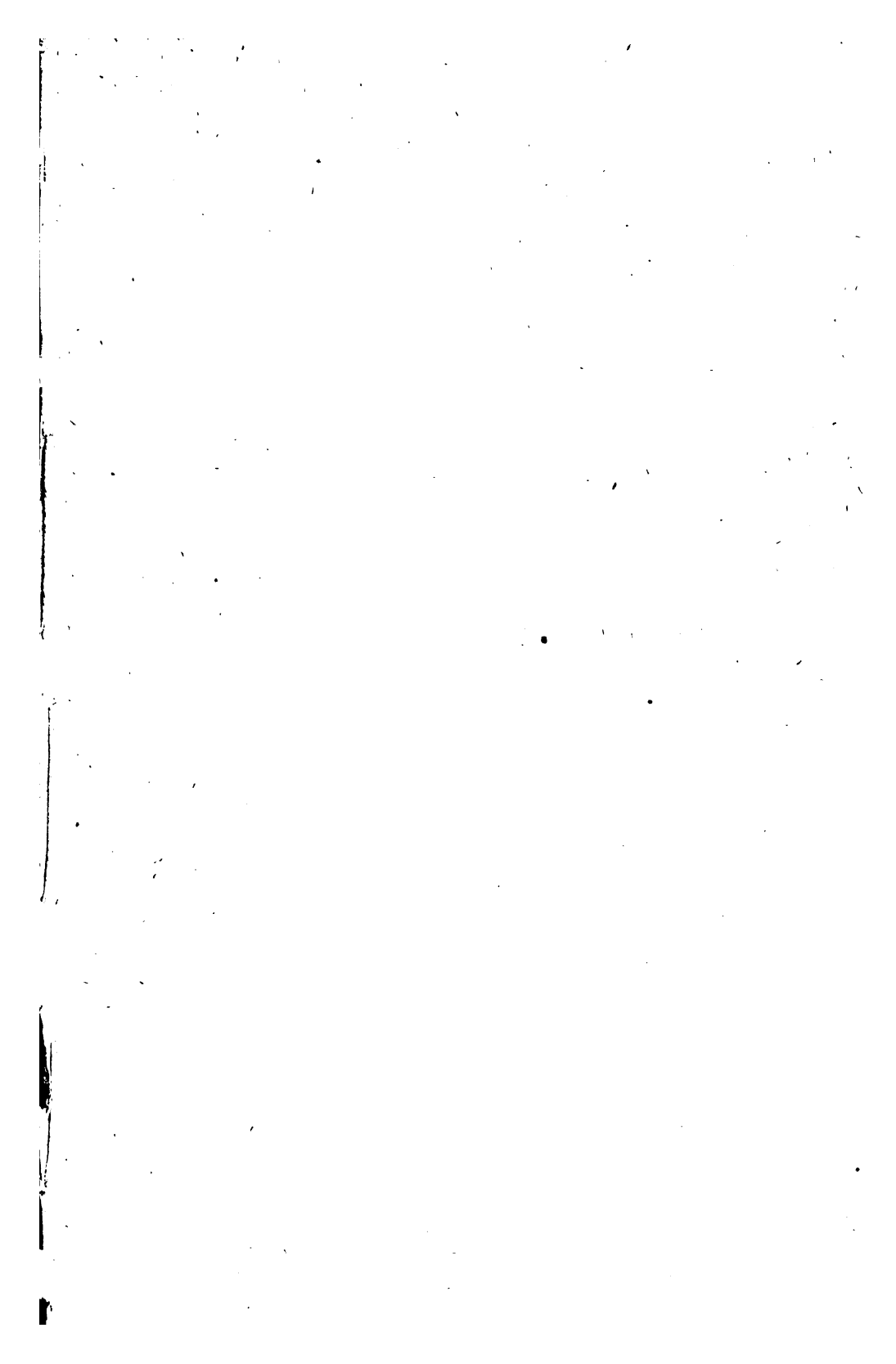
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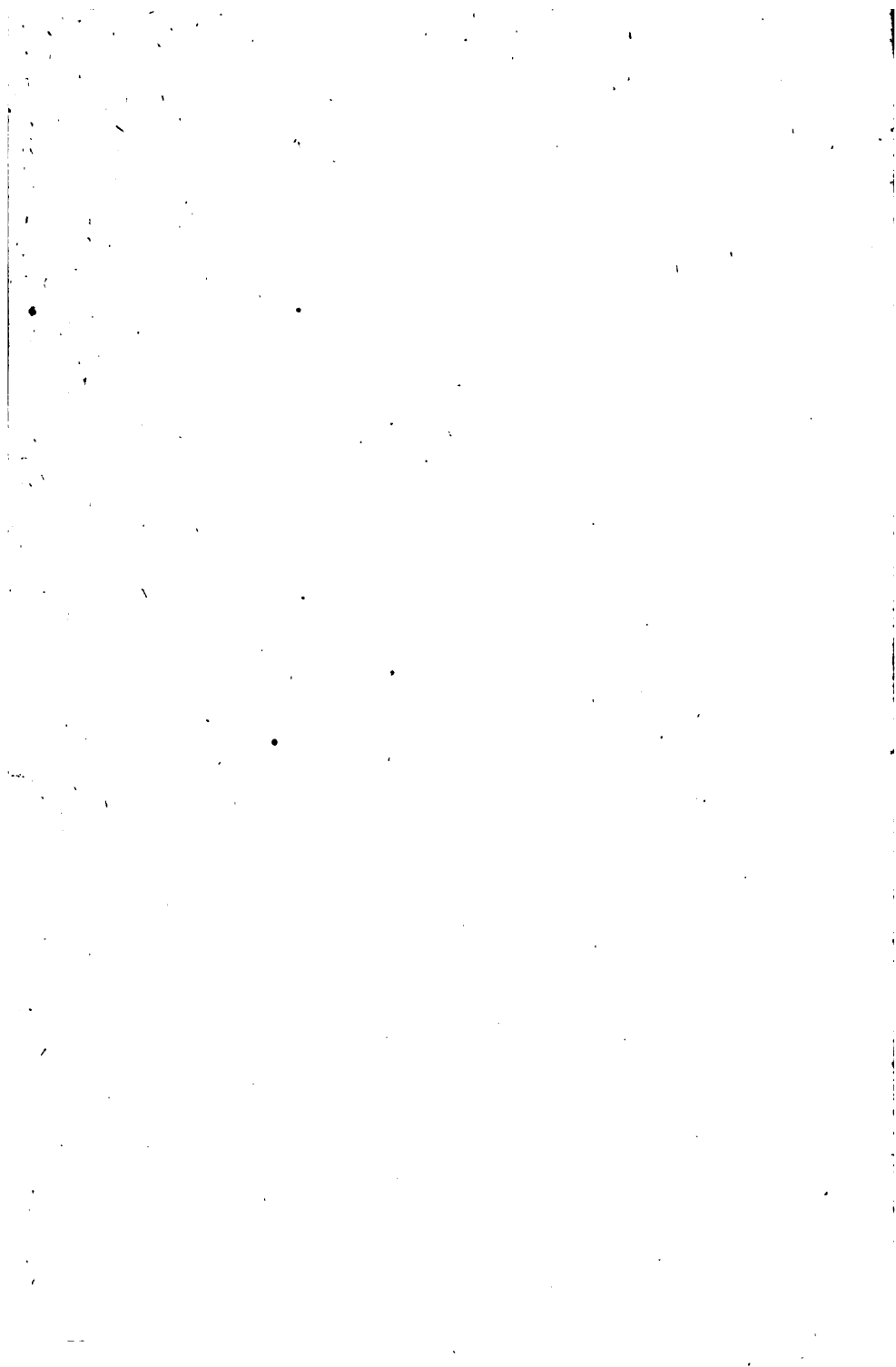
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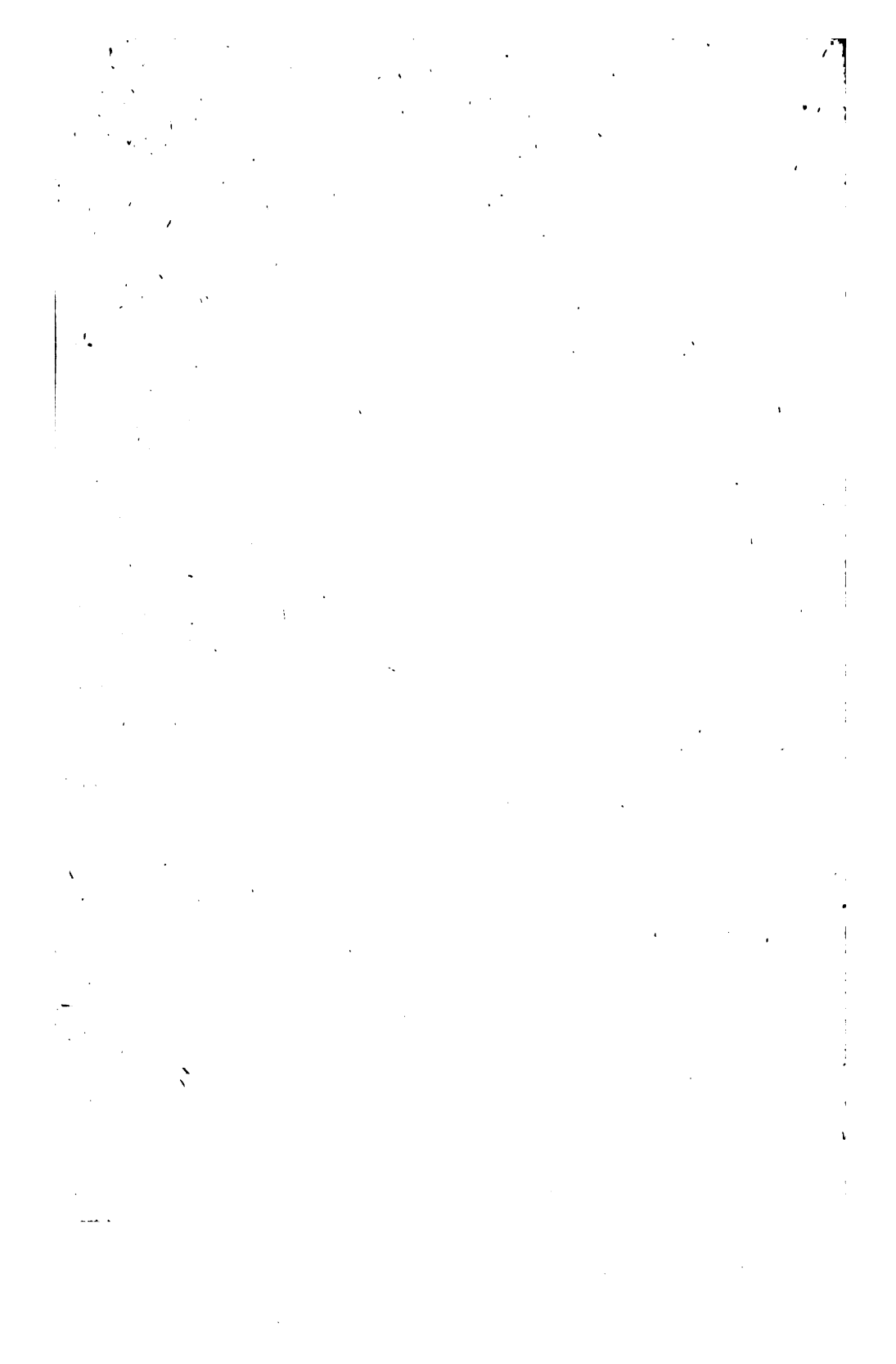
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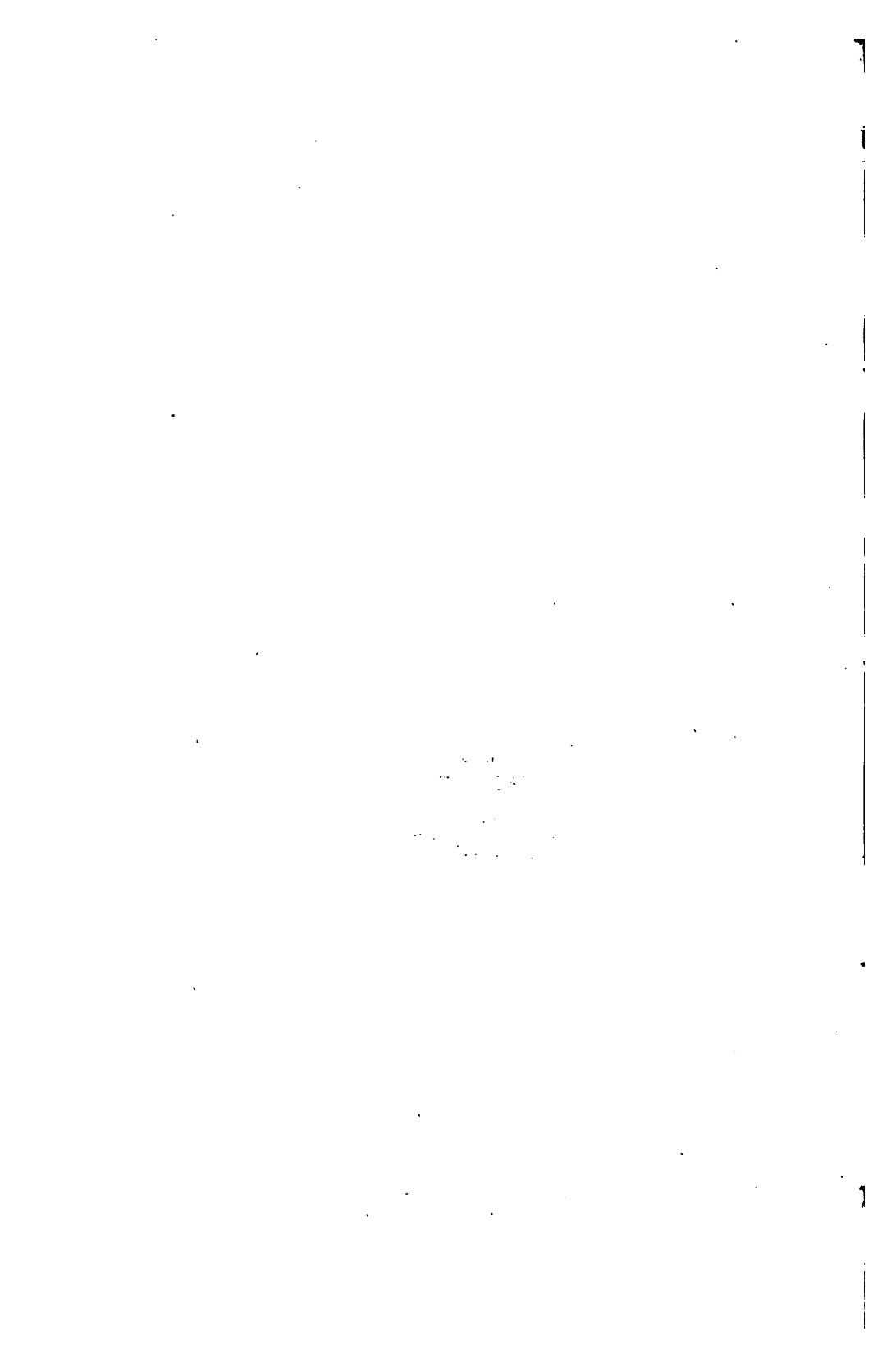






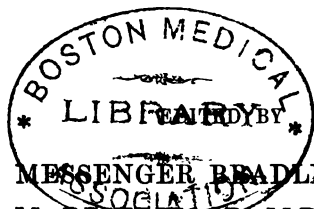


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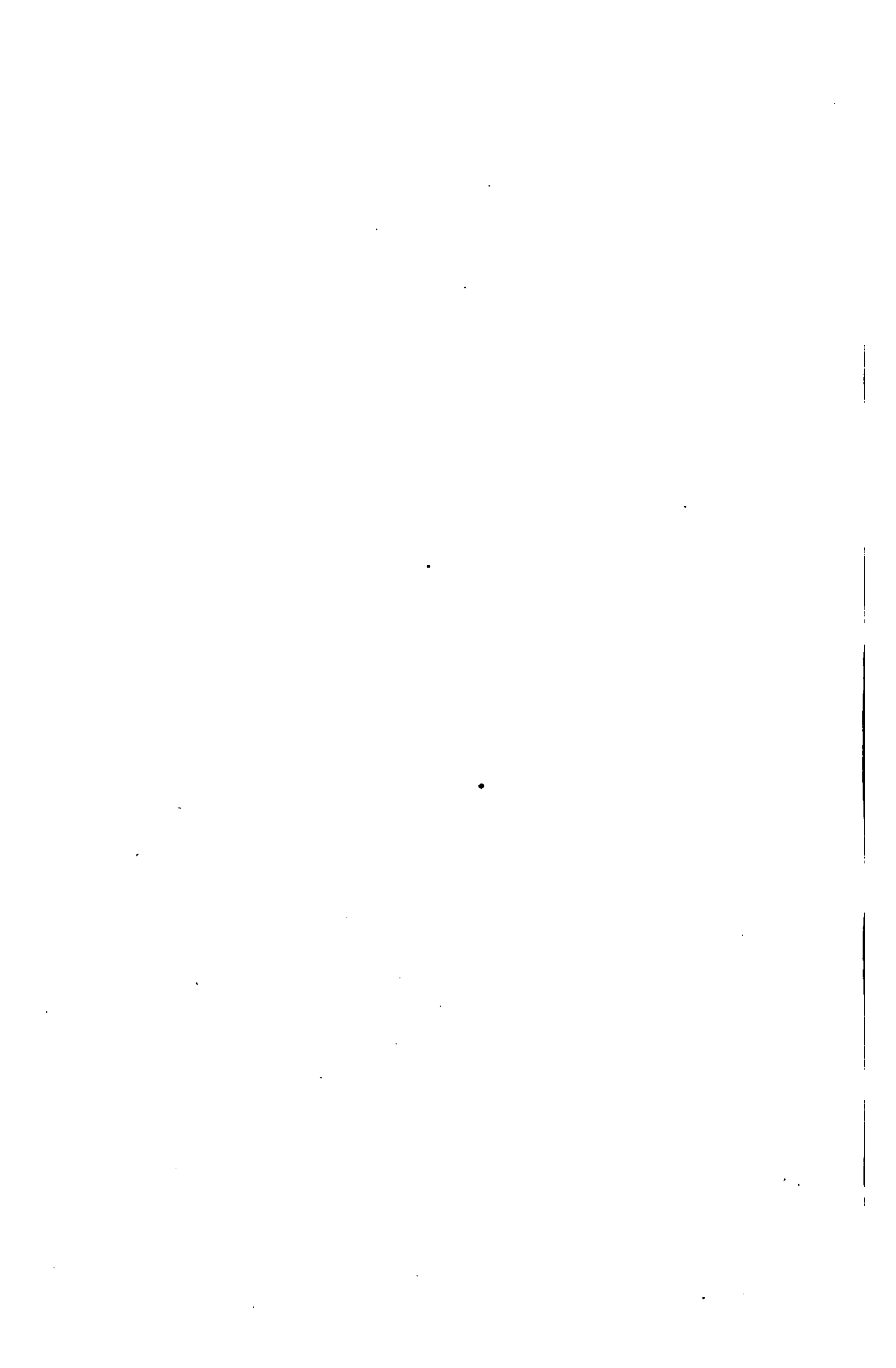
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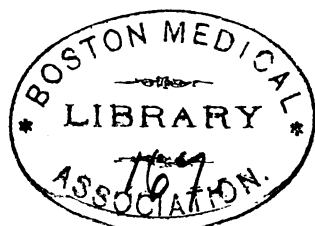


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LIVERPOOL AND MANCHESTER

## MEDICAL AND SURGICAL REPORTS.

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### SUGGESTIONS AS TO THE MEDICINAL TREATMENT OF THE UNBORN CHILD.

By J. THORBURN, M.D.,

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(*The substance of a Paper read before the Manchester Medical Society, Oct. 7th, 1874.*)

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THIS paper, as its title implies, aims at little else than mere suggestion. I must, therefore, apologise for the audacity which has permitted me, at the present day, to bring forward a communication containing very few new facts, and especially no new nomenclature, and which indulges in a certain amount of *à priori* hypothesis, though I trust that the latter will be forgiven, seeing that it is held in honest subjection to actual and future facts.

The pre-natal treatment of the child has always appeared to me to be strangely neglected as a subject of practice or investigation, and I trust that the few observations I have to make upon it may be the means of directing the attention of others, more qualified than myself, to lines of thought and experiment which ought to be productive of valuable results.

It would strike one that at a time when the foetus is so plastic that its most salient features have yet to be evolved, while its

very sex is still a matter of possible doubt, and while its recuperative powers are still so great that, as in lower organisms, the reproduction of a limb or other organ is occasionally attempted,—it would strike one that, at this early period, much might be done to give a healthy direction to future vital processes, or to correct what was, from the observation of former offspring of the same parents, presumably amiss. Yet how little is said or even surmised upon the subject in ordinary available works on obstetrics or diseases of women and children, beyond the usual popular “advice to mothers.”

Knowing that in early childhood the foundations of future health or disease are so often laid, why should we abandon the attempt to act upon a still earlier period, before any external influences have been at work to thwart our efforts?

I strongly suspect that the crude and ridiculous dogmatisms of early writers, ere anything like scientific precision was introduced into medicine, upon the subject of generation, and upon the influences which determine the condition of the foetus, have had much to do in deterring recent investigators from the study of this subject. Fortunately, these dogmatic assertions are now being rapidly banished from medical literature, though it is doubtful whether much is gained by transferring them, under the auspices of some of our popular magazines, to the consideration of the young ladies and gentlemen of the present generation.

The effort of the late Sir James Simpson to prolong the life of the foetus when it was threatened by diminished placental vitality was a bold stroke in the direction indicated. I know, of course, that differences of opinion exist as to whether the administration of chlorate of potash to the pregnant female does actually increase the oxygenation of the blood, and whether the life of the foetus is thus really prolonged, in spite of a diminished healthy placental surface.

For my own part I have made several trials, and have come to the best conclusion I can, viz., that although sometimes the practice is apparently resultless, yet sometimes it is as apparently successful. Whether the true explanation of this seeming success may not occasionally lie in the counteraction of maternal syphilis

I am not prepared to say, but the suggestion, be the theory of action right or wrong, was a bold one, and should ere this have led to some results in collateral directions.\*

I need hardly dwell on the fact that certain morbid poisons, such as the *contagium* of smallpox, scarlatina, &c., may be conveyed to the intra-uterine child, but I will just mention one illustrative case that would seem to point to the fact that the child may thus contract infectious disease which the mother herself is capable of resisting.

Mrs. G. K—, being pregnant, was exposed to the influence of scarlatina. About a fortnight subsequently she was confined of a female child, a little before the expected time. The child when born was covered with desquamative scales—no very rare occurrence; but in a day or two suppuration of the cervical glands set in, and the urine was for three or four days highly albuminous. A *fortnight afterwards* the mother was attacked by scarlatina which ran a tolerably severe course. Both mother and child did well. I can hardly resist the conclusion that in this case the foetus received the poison and suffered its primary effects while yet unborn, the mother being then insusceptible, and that she afterwards, probably owing to her puerperal weakness, became susceptible and was infected by her own offspring.

Without such a case as this, however, there are quite sufficient on record to prove that the intra-uterine child may suffer from various forms of eruptive fevers. I should, however, in fairness mention the fact that in 1870 I vaccinated several pregnant women successfully, and that I found no insusceptibility in their infants. If necessary I think that a satisfactory explanation of this could be found in the more or less localised nature of vaccinia.

Taking it, then, for granted that what I may, for the nonce, term the natural poisons may be communicated to the foetus, it is no less true that many, if not all of our potent drugs—let us call them artificial poisons—may have also a decided physiological effect. No better instance of this could be met with than the action of strychnia. For some years I have been in the habit of

\* Simpson's original investigations on the matter may be consulted at p. 142, *et seq.*, of the recent edition of his obstetrical works by Dr. Black.

administering small doses of this drug during the last months of pregnancy where I had reason to suspect, from former deliveries, the occurrence of uterine inertia and consequent flooding. The immediate result is to produce much more than usually violent spasmodic movements of the fœtus. The patient remarks the phenomenon without being aware of the cause. In the administration of chloral hydrate for the sleeplessness of pregnancy I have likewise been often told that "at any rate it keeps the baby still."

Assuming, then, for the sake of brevity, that whatever agent is capable of being introduced into the blood of the mother and of being passed through the placental villi is also capable of affecting physiologically the fœtus, I will also assume the next step—that whatever affects the unborn child physiologically might also affect it therapeutically, and that disease might thus in its earliest stage be prevented or cured, if only we could have the means of diagnosis that disease or the tendency to disease was present.

Should any one doubt this necessary connection between physiological and therapeutic action I must reserve it for future discussion.

I have limited, however, our aspirations in the therapeutic direction by the very useful conjunction "if." *If* we can diagnose disease, or the tendency to disease in the fœtus, certain therapeutic agents may be brought to bear upon it. But this diagnosis must always be attended by extraordinary difficulties, and can hardly ever be quite free from doubt. Yet are we not often compelled to act under almost equal difficulties in the case of the adult? and yet with the happiest results. Nor do we hesitate to act, indeed we must do so, in many of the most ordinary and some of the most important affairs of life, upon a balance of probabilities. Pure absolute fact is, of course, the only foundation upon which medicine can be based as regards its future progress as a science, but as practitioners of the greatest of all arts we are daily called upon to act in the living present, and to walk by the light we have. Though we stand at the bedside of a Huxley or a Darwin, they will little thank us if we defer all action until medicine become an exact science.

General conditions of system, dyscrasiæ, diatheses, tendencies to disease—these can only be surmised with regard to the foetus, but many of them can be surmised with at least an approach to certainty. Two consumptive parents may not produce a child which will become consumptive, or which will transmit disease of the kind to its offspring, but we are fairly justified in acting on the supposition that they will\*—syphilis is seldom so dormant that it is not traceable in the second generation, and any morbid condition which we find in two or three successive children of the same parents is, unless there be some decided change of circumstance, most probably the fate of their successors. Another line of thought, which is being rapidly worked out, which has emerged from the region of chaos, though it has by no means arrived at the goal of order, will be of infinite value in this diagnosis of the unseen—I allude to the almost certain relationships which exist between various and often unlike forms of disease. The now perfectly ascertained link of connection between rheumatism, cardiac disease, and chorea, is a familiar illustration of the kind of natural classification to which I allude; the psoriasis group, or from a therapeutical point of view the arsenical group, is another not yet so clearly established. However unphilosophic it may sound I cannot help expressing my confident belief that the day will arrive when some medical Dalton will be able to show that our various diseases are but the atomic conjunctions of certain elements or elementary lesions which, as knowledge advances, will be found to be fewer and fewer and combined in more evident family groups. Be that as it may, we have already sufficient evidence of such grouping as to be of some use for diagnostic and therapeutic purposes.

I have thus indicated as briefly as possible certain things which I think may, can, or will be done in the pre-natal treatment of disease. When I come to speak of what has been done I fear you will at once see the necessity for my apologetic introduction. Let me, however, endeavour to show what enormous difficulties, none of them insuperable, stand in the way of exact experiment or

\* Recent investigations on atavism, on the sexual limitation of hereditary diseases, &c., such as those of Sedgwick, may prove of confirmatory value,

research. To say nothing of the difficulties that surround therapeutic inquiries even in the adult, we have here added those to which I have just alluded, arising from the increased obstacles to accurate diagnosis. When the mountain was in labour the most skilled obstetrician could hardly have prognosed the kind of offspring which would result. Looking at the matter as a mere scientific experiment, this alone would be fatal for the present, but if we are to await the arrival of absolute certainties we must abandon the *Ars medendi* for centuries to come, possibly for ever. The *corpora vilia* of the present generation must be submitted to the experiments of those who attempt therapeutics in spite of the darkness that surrounds them.

Supposing, however, that a fairly accurate diagnosis of the foetal morbid conditions is often possible, we must remember that it depends to a great extent upon our knowledge of the parents and of their previous offspring; and hence arises another great difficulty, for who can collect the *data* for a sufficient number of accurate observations? The pure specialist is out of court at once. The clinical ward, that great field of medical investigation, is almost useless, for what reliance could be placed on the family history given by our average hospital patient, even if long enough under observation during pregnancy? The family practitioner can alone supply the necessary *data*, and he, only if he will take the trouble to collect his experiences for many years in succession. I have said enough, I think, to explain the meagreness of the actual facts producible.

Admitting at once that the exigencies of my daily work afford me but little time for medical literature of a retrospective nature, I can find scarcely any traces of work of the kind. Among them I claim Sir J. Simpson's experiments with chlorate of potash, of which the least that can be said is that a mind so acute as his was satisfied that he could thus oxygenate the foetal blood by means of drugs, and by doing so could in certain cases save its life.

I dare say that few are familiar with the experiments of M. Delfrayssé, referred to in the 'Medical Times' of 1850 (vol. xxi, p. 418). Recognising the undoubted fact that children are frequently lost during successive hard labours owing to only a



moderate disproportion between the head and the maternal pelvis, he administered iodide of potassium during pregnancy with a view to stunting the growth and lessening the size of the fœtus at term. As far as his few cases go they tend to prove the possibility of this action of the drug. I have not seen any confirmation of these experiments elsewhere, and have refrained from any myself from a belief that, however interesting they might be physiologically, they are indefensible obstetrically. Perhaps in the obstetric laboratory of the future, spoken of by Dr. Matthews Duncan, something may be done. I have certainly administered iodide of potassium to the pregnant female suffering from syphilis, but under such circumstances any diminution in the size of the offspring could not safely be attributed to the iodide.

Previous to Delfrayssé's experiments, M. Depaul\* had endeavoured by means of repeated bleeding and low diet to bring about the same result. For the same reasons I believe this practice also to be obstetrically inadmissible, and according to the recent observations of Sir James Paget,† bleeding is to be regarded almost in the light of a mere innocent amusement, having little or no effect beyond the next twenty-four hours.

To syphilis one naturally turns as a fruitful field of inquiry as to the pre-natal treatment. Here we have an endless literature, an almost certain diagnosis of the fœtal dyscrasia, and to say the least, strong opinions on the action of remedies in the adult.

Not to enter into debateable questions, I will simply assert my belief that mercury does in many instances modify and remove the external evidences of syphilis, and that it may, contrary to the opinion of some, be safely given to the pregnant female, so long as it is not allowed to produce severe physiological symptoms. Our inquiry, however, regards the fœtus only, and in corroboration of the opinion which I hold that we can beneficially treat the unborn child independently, in a sense, of the mother, I must quote two remarkable cases, having met with several others which in a less degree confirm their evidence. Mrs. —, was married in 1858, her husband then suffering from

\* 'L'Union Médicale,' Jan. 12, 1850.

† 'Brit. Med. Journal,' Aug. 15, 1874.

syphilitic rupia, &c. He was treated non-mercurially, and was in a few months apparently well. In the mean time she became pregnant. About the fourth month she had a suspicious eruption, for which I administered bichloride of mercury in doses of  $\frac{1}{12}$  of a grain. The eruption soon disappeared, and I greatly doubted the correctness of my own diagnosis. Nevertheless she took the bichloride for about three months. At the full time a healthy son was born and he continues healthy till now. During next pregnancy, which speedily followed, there was no indication for any treatment. Mother and father continued well, and accordingly nothing was done. The child, healthy looking at first, was soon attacked with well-marked snuffling, condylomata, and scaly rash. It was treated by mercurial inunctions and did well. During the third pregnancy I prescribed "tonics," the tonics consisting of bichloride of mercury. This child was and is healthy. In the fourth pregnancy nothing was done. This child showed nothing absolutely characteristic of syphilis, but was puny and stunted, and is now the inmate of an asylum for idiots. Two children have since been born, who are reported to be fairly healthy, but they have now left Manchester. To complete the case—the mother has never had any other signs of syphilis, but the father is the subject of what I believe to be syphilitic disease of the brain.

The second case is this. In 1867 I was consulted about a miserably syphilitic child. The history was this. The father had syphilis when married and was for a long time under treatment. The mother never had any detectable symptoms, but it was a case in which we had to be very guarded in putting questions. Her first pregnancy terminated about the eighth month, the child being covered with pustules and dying in a few hours. Next she had three abortions in succession. The present child approached full term. It was a pitiable object, and died under our care in four or five weeks. I could now detect no sign of syphilis in the father. The mother obstinately declined to take any form of medicine, and between this time and 1870 she had again two abortions about the fourth or fifth month. I was then again consulted, and under various pretences we contrived during her

next pregnancy to keep her on a mild mercurial course nearly the whole time. The event was in excess of what I anticipated. She has now a fine healthy little boy of about three years old, who has had no illness since birth. She has had no pregnancy since, but I saw the family lately during an attack of typhoid fever from which she suffered. Time will not allow me to dwell further on these cases; their bearing on our present topic must be obvious.

Syphilis is a disease which, according to our present ideas, possesses a specific character, has a definite series of symptoms, and can thus be recognised, named, and treated. But there are other groups of symptoms to be met with which cannot very well be thus focussed for the purposes of nomenclature, and yet which for the purpose of treatment can hardly be separated. In illustration of what I mean, let me describe what must over and over again have occurred to all of us. Two parents, often healthy as far as can be ascertained, occasionally one or both somewhat delicate, but neither of them necessarily suffering from any special disease, have in succession four, five, six, or more children, every one of which, almost from birth, evinces great delicacy of constitution. They are invariably anæmic, they are almost equally invariably ailing from something, but you cannot possibly foretell whether that something will be gastric disorder, mesenteric disease, ordinary abscess, or anything else. Many of these children are thus cut off in one way or another, but treatment has generally a remarkable temporary effect upon them. Iron usually tells at once, and after a perpetual round of that drug, of cod-liver oil, and of sea side, they are gradually dragged up to man or womanhood. Of course those who die die of tuberculosis, struma, abscess, convulsions, and so forth; those who survive are not tabulated. Now, I feel firmly convinced that in such cases much may be done by pre-natal treatment.

The first case that brought this forcibly to my notice was that of a lady who had two fair delicate children. In her third pregnancy she was almost constantly under my care for severe uterine hæmorrhages, and was treated by saturating doses of iron. I never expected her to arrive at the full time in safety, but she did

so, and gave birth to a large healthy child of dark complexion, black-haired, and up till over three years of age as healthy as could be desired. He then died of fever. Her next child was again fair, and has suffered from morbus coxarius. We know that these divergencies occur in families, when the cause, and there must be one, is inexplicable. In this one it struck me, some time afterwards, that the iron might be the factor. From that time I endeavoured to test the matter, but those who know the paucity of cases in private practice, where one can carry on any scientific experiment of this kind, will not be surprised to learn that the results are hardly tabulable, although they have served to convince me of the truth of my view. In only four instances have I succeeded in getting patients who have had several children of the kind referred to, to take any large quantity of iron during pregnancy; but in the whole four there has been a decided improvement in the succeeding child, and always accompanied by a darker cast of complexion. Proof which can or ought thoroughly to satisfy others can only be obtained by the combined observations of several practitioners. Having seen what I have, and believing as I do, I merely put forth these statements of mine for what they are worth. I should desire, however, to recall the fact that the cases to which I now refer are not those observed in the children of phthisical women or of under-fed ones. The former, for what reason I cannot say, often produce children which for years are healthy and vigorous; and the children of the poorest working people are for the most part strong at the outset. I forbear to speculate on the cause.

Having got at the idea of pre-natal medicinal treatment, I have made many other attempts in the same direction, most of which, though highly interesting to myself, are, from their isolation, of little scientific value; and I think I shall best fulfil the purely suggestive objects of this paper if I conclude by pointing out certain fields of experiment, in some of which I have *data*, valueless alone, but which, added to others, might prove of service. Take, for instance, the whole class of neurotic diseases. I do not attempt to define or limit them, nor pretend that you can always predicate their occurrence; but we know that convulsions with no

traceable organic lesion, chorea, laryngismus, insanity, and other so-called nervous affections, are often met with in startling abundance in certain families. Now we know also that we can physiologically affect, for good or evil, the nervous system of the unborn child. What I have said about chloral and strychnia points to this; and I think—but I strictly confine myself to the word think—that I have thus prevented the occurrence of convulsions after birth, by the previous administration of bromide of potash. It would only weary you to detail cases in which I have at least attempted treatment in this direction; and I shall content myself with merely affirming the fact that twice I have seen several successive children suffer from convulsions, and occasionally die thereof, while the next one after the pre-natal administration of bromide of potash has been free from anything of the sort, and that other less striking coincidences, if any one choose to call them such, have also been observed by me. The tubercular diathesis, if I may be allowed the term, is surely amenable also to some improvement at this early stage. Nothing ever struck me so forcibly as the number of cases of phthisis in children which I met with during the existence of the cotton famine in this district, and especially their amenability to treatment by cod-liver oil. It seemed to act like a charm on the general health, and to correct at once the progress of local mischief. Along with this there was a large decrease in the number of cases of rachitis. The cause was evident: the babies, who suffer chiefly from rachitis, were fed upon maternal milk in much greater numbers than ordinarily; the older children were fed by the Relief Committees on bread, bacon, and soup, milk being seldom given, owing to the difficulty of distribution. I only allude to the fact here for the purpose of suggesting how much more may often be done in early childhood than in later years, and thus of strengthening our hopes with regard to the foetus. I must admit, however, that it would be difficult to obtain evidence of beneficial treatment in these cases. Tubercular mothers so frequently produce extra-strong looking infants that only a very prolonged observation of family histories could avail us anything. Is it not a possibility that the treatment of the mother who is known to be phthisical may often, though

unintentionally, show its fruits in this plump and vigorous condition of the child at birth?

Among other affections which deserve empirical attempts in the meantime, in the way of pre-natal counteraction, and which, if the subject can ever be properly studied, would furnish valuable opportunities for the statistical method, I may merely mention bronchocele and cretinism, skin diseases of various kinds common in infancy, malarial or periodic diseases, rachitis and scrofula. These, together with those to which I have more fully alluded, are among the most likely for the purpose.

Finally, I do not conceal from myself the difficulty of the proceedings I suggest. I know as well as any one the obstacles in the way of all such inquiries. Our knowledge of the more minute anatomy of the body is yet in its infancy; the physiological study of its functions necessarily lags behind; embryology, as a science, is almost a sealed book; the pathology of disease cannot advance beyond these; therapeutics, in spite of a few earnest endeavours of later years, is almost empirical. Add to all these difficulties the special ones to which I have in this paper alluded, and I could not draw a more discouraging picture. But the old maxim that "the gods help those who help themselves" is as true as ever; and I am sure that a little genuine work in the direction I have indicated would avail much to lift us somewhat out of our rut of helpless therapeutics. If only some four or five gentlemen would work together for a while, who could combine a knowledge of therapeutic literature with the capacity for physiological experiment on the lower animals, and with the opportunity of conjointly observing disease as it occurs in private families, I am satisfied that some very decided additions would be made to the science we are all studying, and to the highest of all arts at which we all aim.

## THE HYPODERMIC INJECTION OF ERGOTIN.

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THE use of ergot of rye in this country seems to be almost exclusively employed in obstetric practice, but believing that its more extended use may be found beneficial in general practice, I propose making a few remarks regarding its applicability as a hæmostatic in various diseases, especially in the form which has been called *ergotin*.

There appears to be a little difficulty with some chemists as to what *ergotin* really is, some vaguely calling it the active principle of ergot, as, indeed, its name implies; others that it is the pharmacopœial liquid extract of ergot evaporated down to the consistence of an extract. But that form which has been most generally employed both in this country and on the Continent is the so-called *ergotin* prepared by Bonjean's process, and is simply a purified extract, the following being the mode of preparing it: "Exhaust the ergot with water, evaporate to the consistence of syrup, precipitate the albumen, gum, &c., by a large excess of alcohol, decant the clear liquid, and evaporate to the consistence of a soft extract;" it is thus an alcoholic extract, whereas the *extractum ergotæ liquidum* is only half so.

Badly and carelessly prepared *ergotin* is liable to do harm when administered hypodermically, and to induce erythema and cellulitis by the injection of very small quantities, so that great care should be employed as to the source whence the drug is obtained.

Ergot has long had the reputation of being a styptic, and if its physiological action of inducing contraction in the involuntary or non-striated muscular fibre was more generally known and acted upon, its sphere of usefulness would be very greatly extended.

Dr. Jacobi, Dr. Meadows, Brown-Séquard, and others, have written upon the physiological action of ergot, and Von Langenbeck and others on the Continent have used ergotin most successfully in cases of aneurism and hæmoptysis.

In 1870 Dr. G. W. Balfour, of Edinburgh, recommended the hypodermic injection of ergotin in hæmorrhages of various kinds, and being at that time a resident surgeon in the Edinburgh Infirmary, I was able to test the treatment in cases of oozing after operations and in epistaxis, but did not keep notes of the cases; it was also generally used over the hospital for hæmoptysis and hæmatemesis with surprisingly good results.

During the time I was house-surgeon of the Liverpool Infirmary, as may be supposed, I saw a considerable number of patients suffering from epistaxis, but have never had occasion to plug the posterior nares in a single instance, treatment with ergotin being invariably successful. I kept notes of most of these cases, and the following are selected from among them :

CASE 1.—A butcher, æt. 28, had suffered from attacks of epistaxis, which had occurred monthly for the five months previous to his presenting himself at the infirmary; each attack had lasted for three or four hours, and he had been treated with gallic acid and iron; on two occasions his posterior nares had been plugged, but with little benefit. The day he presented himself at the Infirmary the hæmorrhage was copious, apparently coming from both nostrils, and he had then been bleeding for half an hour. I injected five grains of ergotin dissolved in twenty-five minims of water into his forearm; in less than four minutes the hæmorrhage had entirely ceased, and as the man was working at the slaughterhouse just below the Infirmary I allowed him to leave. In three weeks he returned, being just in the same plight, and during the next four months he came up five times, when the same treatment was adopted with the same success. Six months after I called in to see him and he had had no return.

CASE 2.—A girl, æt. 18, who a fortnight previously had been plugged for epistaxis. The hæmorrhage had returned; and her horror of the previous operation was so great that she said she



would rather suffer any pain than go through it again. Four grains of ergotin were injected, arresting the bleeding within three minutes.

CASE 3 was a sailor, looking anæmic and blanched, who, on the voyage home from Calcutta, had bled seriously at the nose about every third day. He was admitted into the Infirmary; the day after, the hæmorrhage came on—not copiously, but, in his weakened condition, to a very dangerous extent. I injected five grains of ergotin, when the bleeding almost instantly stopped. The patient stated that when at sea he could never get the blood to cease flowing under two hours, with cold applied to the back of the neck and face, and washing his mouth out with cold water. The hæmorrhage returned slightly four days after, and was instantly checked with the ergotin. A fortnight after, he was discharged, no return having taken place.

The remainder of the cases of epistaxis were all treated in the same manner and with the same results.

I have notes of only two cases of hæmoptysis treated with ergotin. The first was a tubercular-looking girl, æt. 17, who had suffered from hæmoptysis for some days previous to my seeing her, bringing up mouthfuls of bright red blood. I injected four grains of ergotin; and although I kept her under observation for four days, only two bloody sputa followed, and those within half an hour of the injection. There were no signs of tubercular mischief in the lungs.

The second case was a woman, æt. 32, who had been spitting blood for the past three months; and on the day of her admission, according to her own account, she had vomited up a pint of bright red blood, and was when I saw her still bringing up mouthfuls. Five grains of ergotin were injected; no blood was expectorated for five days, when there was a slight return, the sputa just being streaked. For the next fortnight she rapidly gained strength, and there was no return.

There is one other case I would mention, of a woman who was admitted into the Infirmary with flooding from a fibroid tumour of the uterus. The vagina had been plugged before admission with

sponges, but the hæmorrhage was still very considerable. I injected five grains of ergotin, which arrested the bleeding in two or three minutes. Exactly twelve hours after, the flooding recommenced, and was stayed in the same manner; and for the next three days I had to repeat the process every twelve hours. The blood became very watery, and the patient eventually died from loss of blood and sheer exhaustion, four days after the last injection of ergotin.

There are many other cases I might cite, such as bleeding from internal hæmorrhoids and in dysentery, which were successfully treated with ergotin; but the foregoing, I think, are sufficient to show that ergotin, injected subcutaneously, possesses in a remarkable degree the properties of a hæmostatic.

In addition to its successful use in the cases of epistaxis above mentioned, the simple manner of application, which is effected by passing a needle under the skin, compared with the disagreeable operation of plugging the posterior nares, should not be lost sight of.

More recently I have found, by treatment in various cases, that three grains of ergotin have proved quite as efficient as five; and as bulk is a great consideration in subcutaneous injection, I have adhered to the smaller dose. This amount, viz., three grains, can readily be dissolved in ten minims of warm water.

The pure ergotin, when kept covered in a porcelain pot, will keep for any length of time; but when liquefied with water, it soon loses its active properties, and becomes inert.

These brief remarks are offered, trusting that more general attention may be drawn to the use of this valuable drug, and in the hope that they may lead to further experiment, from which good may result.

## SYPHILIS AND SYPHILITIC AFFECTIONS OF THE NERVOUS SYSTEM.

BY J. H. BARNES,

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*Sexual, contagious, and hereditary* syphilis, has become interwoven into the very web of human existence.

Its effects are as varied as the human organism, and as wide-spread as the human race, and though it does not in these present times, as it did of old, go forth in its might and slay its thousands at a stroke, it slays none the less, albeit its victims are stricken in units and in secret.

A disease of many aspects, it has ever presented features of peculiar interest for medical inquiry, and few diseases have given rise to a greater variety of conflicting opinions.

Possessing no insignificant history, its voluminous literature evidences the attention it has received at all times from the ablest minds of our profession. In spite of this attention, however, it has only within a very recent period become disassociated from a mass of error and confusion truly astounding.

From the sixteenth to the present century all venereal diseases were confounded together, Benjamin, Bell, and Ricord being the first to demonstrate the separate existence of gonorrhœa.

In 1852 Bassereau advanced another stage in the disentangling of the confused skein by separating the non-constitutional soft, from the constitutional hard chancre. The true nature of the disease was not, however, fully realised till Dittrich and others disproved the dogma of Hunter and the opinion of Sir Astley Cooper, who taught that "this disease does not appear capable of exercising its destructive influence on the vital organs." With

the evidence that *no* organ and *no* tissue of the human body is free from its effects, the true constitutional character of the disease became recognised.

Writing in 1868, Dr. Moxon says "that even yet the frequency of the syphilitic causation of disease is not so familiar and ready to the mind as it should be," and I fear his words still bear application.

As early as 1846, Ricord seems to have had a suspicion that many cases of paraplegia were due to tertiary syphilis. In 1848 his allusion to the subject, though more definite, was still very slight.

It was not till the year 1852, 1854, and 1860, when Dr. Read, of Belfast, and Dr. McDowell, of Dublin, published cases of syphilitic meningitis and other affections of the nervous system recovering under the influence of mercury, that the subject began to assume definite form.

In 1861 Jonathan Hutchinson and Hughlings Jackson wrote on the subject and narrated a large number of cases collected from different sources, while in 1862 Zambaco, a pupil of Ricord's, wrote an elaborate essay entitled "Syphilitic Affections of the Nervous System." Later still, the subject has been developed by Robin, Bazin, Wilks, Moxon, and many others at home and abroad, and at the present moment the latest expression of opinion on the question may be found in the Lettsomian lectures of Dr. Broadbent, lately published.

At the present day syphilis is generally acknowledged to be a specific contagious disease, possessing a definite period of incubation, originating a febrile state of the system, exhibiting a characteristic symmetrical eruption, giving rise to a reproduction of the virus in the blood, thus making the victims sources of disease, having the capacity of rendering its subject insusceptible of re-inoculation, and possessing a liability of being accompanied by various organic lesions. In these respects it somewhat resembles the exanthemata. Its symptoms were early seen to present certain peculiarities in the time and order of their appearance, and it has become customary to arrange them into primary, secondary, and tertiary. As some, however, deny the existence

of the later tertiary symptoms, and attribute their existence to the remedies used in the treatment of the primary and secondary ones, and as others base their classification on the *time* of the appearance of the symptoms, whilst others, again, disregard the time of their appearance, and only consider their nature, great confusion exists on the subject.

Dr. Wilks looks on syphilis as a blood disease characterised by a tendency from its commencement to deposit, varying somewhat according to the tissue in which it takes place. This deposit is early seen and recognised in the periosteum as nodes, as condylomata, and mucous tubercles in the skin and mucous membrane, as nodules in the tongue, the muscles, and the iris. It is followed by secondary results, due to its extent and the anatomical position it may occupy. He considers the secondary and tertiary lesions in the light of different stages of the same disease; he calls the whole, from beginning to end, simply syphilis. Fully recognising certain changes due to conditions of the system set up by the disease, he calls these the *sequelæ* of syphilis.

Dr. Broadbent, however, entirely differs from Dr. Wilks, and thinks the difference found in the symptoms better explained by accepting Mr. Hutchinson's idea of the disease resembling a fever, and looking on the tertiary symptoms of the disease as the *sequelæ* of such fever. He professes to class these tertiary manifestations, not according to their time of appearance, but according to their order and nature. Adopting the classification of Mr. Lane, he says the lesions are as follows:

Secondary:

*Of skin.*—Macular, papular, tubercular, vesicular, scaly, and pustular *eruptions*.

*Mucous membrane.*—Mucus tubercle, superficial and deep *ulcers*.

*Muscles and fascia.*—Arthritis, bone-pains, periostitis, and iritis.

Tertiary:

*Skin.*—Cachectic, rapid, and rupial *ulcers*.

*Fibrous tissues.*—Orchitis, arthritis, periostitis, caries and necrosis of bones.

*Muscles and organs.*—Deposits of fibro-plastic lymph, lardaceous and waxy degeneration.

The first class of lesions, he says, are benefited by mercury and not by iodine. The second class are benefited by iodine, and not only not benefited, but injuriously affected by mercury.

There is a plausible completeness about this quite charming. If it were not true, we could wish it were true.

But objections to this classification at once suggest themselves. Firstly, one symptom, periostitis, is placed in both tables. Then, while the deposit of fibro-plastic lymph is placed in the category of tertiary symptoms, iritis is classed among the secondary lesions. Again, who cannot at once see the radical difference between caries and necrosis of bone, and periostitis and orchitis, with which they are classed, and between fibro-plastic tumour and amyloid degeneration of organs also bracketed together? The table, though accepted by Dr. Broadbent, entirely contradicts his first canon of classification, namely, the arrangement of symptoms, not on the plan of their time of appearance, but their nature. If we turn from the symptoms to the pathology of the disease, we are met with the same uncertainties and differences of opinion. Some look upon the anatomical structure of syphilis in the light of true inflammatory products, and consider that they possess no specific characteristics. Virchow, on the other hand, considers the gummata as amongst the class of non-inflammatory formations called granulation tumours, and Wagner considers them as characteristic of the disease, as are the products of cancer and tubercle of their diseases. He indeed designates this by a specific title—syphiloma. Some profess to have discovered two distinct lesions, one consisting of the true gummy deposit, and the other of localised fibroid changes. Dr. Wilks, with the same unity of conception he brings to the consideration of the symptoms of syphilis, looks upon the difference in the appearance and character of syphilitic deposits as due to differences of position and time of origin of such deposit. He considers the latest and hardest

tumour of tertiary syphilis as originally of the same nature as the primary induration at the point of inoculation. Fluid or semi-fluid in consistence, albuminoid or fibroid in nature, poured out amongst various tissues; it gives rise by hardening to a more or less definite tumour, involving in itself the tissue affected, and taking the shape of the position in which it may be poured out. These tumours may remain inert for years, or they may undergo a process of secondary softening. Upon microscopic examination they are seen to consist of fibro-plastic material, small nucleoli, fatty granules, and amorphous matter, and often the tissue in which they are deposited may be seen permeating them.

Being a deposit, and not a tumour growing from a point, it is less homogeneous and less easily enucleated than other tumours. This view of the nature and origin of syphiloma receives support from the fact of their position, which is chiefly in parts well supplied with vessels, as the optic thalamus, corpora striata, and about the third and fourth nerves, and also from the rapidity of their appearance and disappearance. Virchow says gummatous tumours of the brain never soften in the centre like tubercle, which generally degenerates early.

The same diversity that surrounds the question of symptoms and pathology of the disease surround its principles of treatment. We have the mercurialists and the anti-mercurialists, the iodists and the iodo-mercurialists, each advocating his special remedy.

The two following cases, which present a contrast and a parallel, will serve somewhat to illustrate the subject. The first is that of a medical man attached to a large institution, the second that of a patient under his care.

During the latter part of June, 1866, whilst passing through the wards of the lying-in hospital to which he was attached as surgeon, at the request of the nurse he hastily examined a patient, being quite unconscious that *she* was the subject of syphilis, and that *he* had a scratch upon the knuckle of the index finger of the right hand.

In about three weeks' time a hard brawny swelling of a deep purple colour, and about the size of a horse-bean, made its appearance on the finger. On the top of this induration was a

superficial ulcer discharging a thin watery fluid, the obstinacy of which in refusing to heal under ordinary treatment was attributed to its position over the joint. The absorbents of the arm now became inflamed, and a hard lump nearly the size of an egg formed in the right axilla. This never suppurated. Next followed slight sore throat, profuse macular eruption, and at the same time a node on the right clavicle and another on the right ramus of the lower jaw.

Under a very mild mercurial-iodide treatment these symptoms gradually subsided and were thought no more of.

In the early part of September of the same year, whilst walking home one evening, he was suddenly seized with an acute pain over the sternum and right side, so severe as to make movement and breathing extremely difficult.

In the months of October and November intense pains in the head were experienced, so violent as to preclude sleep except under the influence of large doses of *Liq. Opii Sed.* or *Tr. Cannabis Indicus*, as much as a drachm of one or the other being taken at a time. The sense of hearing about this time also began to be greatly disturbed. There was heard a constant heavy buzzing sound and a shrill singing whistle, and at times a noise as of carpenters hammering down a new floor.

In the following March (1867) he happened to break his right clavicle, and whilst suffering from this accident an eruption made its appearance about the face and head, for which he underwent a short course of mercurial inunction.

For the next eighteen months he was subjected to a variety of disturbances, consisting for the most part of general indisposition, acute nerve pains, and sensations of pain and pressure over the sternum. These were followed by double sarcocoele, one testis becoming nodulated and the other large and ovoid.

All this time the traces of the original inoculation had been gradually but slowly subsiding. First the swelling disappeared, then the true marking of the knuckle began to reappear, and lastly, the deep brown stain of the skin of the finger passed away, and with its disappearance the patient looked upon himself as quit of the disease.



Not only was the disease not recognised for at least three weeks after inoculation, but the serious nature of the attack was never really realised. The later symptoms were never properly associated with the original disease either in conception or treatment.

A few doses of prot-iodide of mercury, a few doses of iodide of potassium, a slight course of mercurial vapour baths, and a slighter course still of mercurial inunction, formed the whole of the treatment adopted.

In the early part of December, 1870, two years after all traces of the previous attack had passed away and had been forgotten, he began to experience feeling of coldness and want of distinct sensation at the soles of the feet. On rising from a chair the impression of the chair at the back of the thighs would still continue and be accompanied by a feeling of "pins and needles" down the legs.

Towards the end of the month a sudden and severe attack of pleuritic pain, very much like that experienced in the September of 1866, set in, and lasted for a day or two. This was relieved by violent exercise and a free application of aconite liniment.

On the 25th (Christmas day) the coldness and numbness of the feet became so great that no amount of stamping or walking about could shake it off. These sensations were attributed to the intensely severe frost that prevailed at this time.

Late at night, upon suddenly looking up from the book he was reading, he became aware that he could not see the pictures on the opposite walls. When these became visible, as they did after looking at them for a few moments, on returning to the book the print was invisible. The eyes had lost the power of rapidly focussing objects at different distances.

On awakening next morning he became conscious of a general disturbance of sensation. Everything seemed strange and out of order, an air of unreality pervaded all things, and he felt as if he were walking in a dream. On going out into the streets the confusion was greatly increased, and he was then first conscious that everything he looked at became double. Against the advice of the physician on whom he called, and who recommended him

to go home and keep quiet, he went about the whole day, but found his ankles constantly knocking against each other, and that his walk kept merging into a kind of running trot.

The next day he was unable to leave his bed, and the following symptoms existed :—There was double vision ; pricking, burning sensations in the palms of the hands and soles of the feet, these latter feeling as if they alternately dilated and contracted. Sensations of pressure, as if some one was ramming a fist between the legs, or pressing with the palms of the hands over the front of the thighs above the knees.

In a few days all these sensations and disturbances passed away, and there remained numbness of both arms and hands, greater on the left side, less on the right ; numbness of the outer aspects of both legs and feet, involving especially the two outer toes, greater on the left side, less on the right. A cord-like constriction existed round the waist, accompanied by great general prostration and loss of power. There was a slight sense of uneasiness in the spine between the shoulder-blades, but no pain or tenderness on pressure, or on the application of a hot sponge. Though the attack was supposed to be possibly due to syphilitic causation, the medical attendant rather inclined to attribute it to over-exertion and exposure to extreme cold. The treatment adopted was, rest in the recumbent position, counter-irritation to the spine, bromide and iodide of potassium, and afterwards Liq. Hyd. Perchlor. and potash.

In about three weeks' time he was enabled to leave the bed and crawl into the drawing-room on the same floor. There still persisted the sensation of constriction at the waist, and numbness of the left arm and outside of both legs. The bladder required a long time to empty, and the fæces were not felt when passed. The muscles of the right side of the abdomen were visibly more active in any effort at straining. With the aid of objects within reach he could walk about, but could not balance himself well, especially if the eyes were closed.

At the end of February (1871) he went to Bath for change of air, at which time he was still taking iodide of potassium in increasing doses. Whilst there, one morning, as he was preparing

to go out, he was seized with a feeling of pins and needles in the legs, followed by a sense of sudden dissolution. The muscles of the face commenced an involuntary twitching, and he fully thought he was dying. Upon the advice of the medical attendant, who, though he considered the attack he was suffering from was the effect of syphilis, recommended him to leave off all specific treatment, he commenced a course of tonic treatment and building up.

In March he went to London, and saw Mr. Berkeley Hill, who recommended him to Dr. Russell Reynolds as being an all-round physician, not likely to be biassed by any speciality view of the case.

At this time he was still very cachectic and feeble. He could walk with the aid of a stick to steady himself by, but the walk was very flat-footed and wanting in elasticity. The legs had a kind of independent movement, making the walk jerky and strutting. There was still numbness of the legs and left arm, constriction, and partial inability to balance the body with the eyes shut. Dr. Reynolds, who examined the eyes with the ophthalmoscope and pronounced them all right, recommended  $\frac{1}{16}$  grain doses of biniodide of mercury three times daily, to be continued for a long time, and if no improvement took place, advised him to go to Aix-la-Chapelle and consult Dr. Wetzler.

The biniodide was continued for nearly three months without any appreciable change, and was then given up. He now went to Wales, and took a cottage on the side of a mountain overlooking the sea; and while there, and under the influence of no treatment, had a relapse in the shape of a sudden loss of strength and spirit. From this time till September he resumed the iodide treatment; but he was constantly having attacks of sudden loss of power, usually coming on at intervals of three weeks.

In September he went to Aix-la-Chapelle, and saw Dr. Wetzler, who was decided and emphatic. His advice was, mercury—for weeks, months, or, if necessary, for years. He was at once put on a course of mercurial inunction; about half a drachm of the strong mercurial ointment being rubbed in each night, and washed off in the morning by bathing in the waters of Aix-la-Chapelle. So weak and miserable was he at the time that he had scarcely the courage to continue the treatment; nevertheless, he carried it out

for a month at Aachen, and for three months longer after reaching home. No sign of salivation manifested itself, and there was a gradual general improvement.

On the 19th of May (1872), on awakening, he found himself again suffering from double vision, sudden loss of power, increased numbness of the left side, difficulty in walking, and great depression of spirits. In two or three days these symptoms passed off of themselves.

On June the 1st he was seized with a sudden attack of prostration, dimness of the vision at the outsides of the eyes, showers of falling sparks, and quivering of the muscles of the face. On the 13th the sight became confused; on the 14th more confused; on the 15th there was headache, and double vision again set in.

When he looked in the glass, he could see two faces staring at him—one above, and the other below and beside the other. As the head was moved about, these faces would revolve about each other in the most confusing and uncomfortable manner. Besides the upward and outward strabismus, there was ptosis of the right lid.

As this attack of strabismus did not pass away like the last, after a fortnight's rest at home he went to Ilkley, in Yorkshire, for a few weeks. No change taking place here, he was advised by his friend Dr. Scott to see Dr. McLeod of Ben Rhydding, and a physician attached to one of the hospitals for epilepsy and nervous diseases, who happened to be there on a visit.

The London physician's advice was that he should adopt a tonic treatment, consisting of phosphorus and cod-liver oil, carefully using the constant current battery. He was of opinion that the eye would right itself suddenly.

Dr. McLeod's advice was that he should give up all active employment for at least three months, and undergo a persistent course of mercurial treatment.

In passing through Leeds he called on Dr. Clifford Albutt, who considered he was suffering from syphilitic deposits, probably about the right crus cerebri. He examined the retinae, and told the patient he was happy to be able to say there was no optic neuritis. Previous to visiting Ilkley he had resumed the iodide of potassium

and used the constant current battery, without producing any effect.

In July he took advantage of Dr. McLeod's kind assistance, and made arrangements for a three months' stay at Ben Rhydding, where he at once commenced a course of mercurial vapour baths, taking them at first daily, then on alternate days, and then twice a week, and using at first two scruples of calomel and afterwards two drachms of bisulphuret of mercury to each bath.

Under this treatment his appetite improved and his strength returned. First the lateral and then the vertical displacement of the eye began steadily and slowly to subside. The ptosis also passed off, and he was enabled to walk with greater firmness, with ease accomplishing as much as five or six miles at a stretch; he could not, however, run a single yard.

The baths were continued at home, after leaving Ben Rhydding, till the end of the year, altogether a period of six months, and not the slightest trace of mercurialisation manifested itself.

In February, 1873, a fourth attack of strabismus came on, accompanied as before with general disturbance. Some slight deposits of lymph were now seen on the vessels of the retina. A short course of mercurial vapour baths soon restored parallelism to the eyes.

Another long period of comparative health was now experienced, but was interrupted on the 6th of August (1873) by a sudden attack of neuralgia, attacking the external saphenous nerve of the right leg. On the 19th darkness of vision at the outsides, flickerings of light, pain at the top of the head, at the right side, and general loss of power came on; but there was no disturbance of the bodily functions, and the appetite remained natural.

On the 24th of December another sharp and sudden attack of neuralgia set in again, affecting the external saphenous nerve of the right leg, and again also coming on in the night, during sleep. This attack lasted ten days. The pain was of an explosive, tearing character, sometimes like sudden flashes of electricity, and so intense as to be almost unbearable. It usually occurred about five o'clock each evening, and lasted on and off till the next morning.

On the 29th the nerves of the left leg and arm became affected. Sleep was only obtainable by the subcutaneous injection of  $\frac{1}{4}$  gr. of morphia once or twice in the night. The mercurial vapour baths were this day resumed, and on the 1st January, 1874, the pains began decidedly to diminish; a sense of prickling in the foot, as if a shower of fine hailstones were falling over it, taking the place of the pain. On the 2nd there was still greater improvement, but the right pudendal nerve became affected, and he again experienced the sensation felt at the commencement of the illness in 1870, as if some one were pushing a fist between the legs.

This attack, like many of the others, after passing off left an increased sense of numbness in the left arm and at the outside of the legs, increased feeling of pressure round the waist, great heaviness of the legs in walking, and a slight sensation as of a thin layer of water cushion at the soles of the feet.

On January 23rd, 1874, there appeared on the right forearm a dark copper-coloured irregular blotch of scaly eruption, about the size of a shilling, and on the arm, above it, a round circumscribed brown papule; on the thigh also there began to appear numerous small circular patches of scaly and non-scaly eruption.

With the exception of acute ephemeral nerve pains quite dissecting out the various nerves of the legs—a more or less persistent symptom throughout the whole attack—an interval of three months' comparative health was experienced, followed by a sudden intense depression occurring in the middle of the night of May the 8th. Flickerings of light and hemiopia again supervened, and on the 26th great disturbance of the sense of hearing. Sounds as if some one were jumping on the floors of the rooms above, and causing the windows to bulge out, with a constant buzzing and drumming noise, were heard. In spite of general constitutional and tonic treatment great debility persisted, and culminated, about the beginning of July, in a sudden loss of power in both legs, the right becoming especially numb and heavy. So great was the feebleness that he could not stand without a stick or catching hold of something, and getting up and down stairs was a matter of difficulty. When standing there was experienced a sensation as if the two legs were gradually gliding away from each

other, and the impression was only corrected by looking down at the feet and seeing that they were still in the same position. While walking the knees, sometimes one and sometimes the other, would suddenly give way, and once or twice he was brought to the ground from this cause. Quinine, nux vomica, with and without iron, iodide of iron, and iodide of ammonium, were severally tried without any effect, and resort was at last had again to the mercurial vapour-bath, with the result of immediate and steady relief.

At the beginning of August the patient went to Mr. Cuff's establishment at Woodhall Spa, Lincolnshire, and commenced a course of bromo-iodine baths and waters. Under the influence of one mercurial bath weekly and the Woodhall Spa waters, his general health and powers of locomotion have greatly improved, and at present he is able to follow his ordinary professional duties, simply suffering from an occasional neuralgic attack and inability to convert a walk, however fast, into a run.

CASE 2.—H. G—, aged 42; tall and spare; not over temperate. In the August of 1871 was seized with a pain in the left leg and knee, accompanied by great general depression. He sought advice, and was considered to be suffering from rheumatism. Two or three weeks after, whilst in bed, he was again attacked with a sharp pain, commencing in the big toe of the left foot. The pain ran up the leg to his head, and was followed by a violent epileptic fit, in which he struggled and fought so much that it took four or five men to hold him down. In the fit he screamed and bit his tongue. On coming to himself, he found the left side of his body numb and dead. For some time he was very weak, and occasionally faint, but recovered in a month sufficiently to be able to work. On the 1st January, 1872, he was attacked with another epileptic fit, having a few days previously suffered from slight headache and constant pain in one spot at the left side of the head.

He was now ordered large doses of bromide of potassium, which gave great relief to the irritability of temper from which he suffered, and also to the constant violent jerking and twitching of the left arm and hand which he experienced.

Suspecting the possibility of syphilitic causation, large doses of iodide of potassium were now given; but as the patient became decidedly worse under the drug it was discontinued, and the suspicion of the specific nature of the disease discarded.

On the 28th of February another fit took place, and he became quite insensible. In this state he remained for several days, becoming hourly weaker. Whilst those about him were watching for his death he began gradually to change, became conscious, and revived. Upon examination his head was found to be lumpy and tender to the touch, and he was then placed on ʒj doses of Liq. Hyd. Perchl. ter die. A marked improvement soon set in, and towards the end of April he went away for change of air, and on his return he resumed his employment for the rest of the year.

On the 18th of January, 1878, he was again seized with pain in the head, and fits not quite so epileptiform in character.

The left eye-ball became gradually extruded from the socket, and the sight on that side almost lost. There was upward and outward strabismus and ptosis. The left leg and arm also became partially paralysed. The protoiodide of mercury was now given, and afterwards large doses of the Liq. Hyd. Iodid. Arsenici; and under this treatment the eye gradually subsided into the socket, the sight returned, the paralysis of the third nerve and of the left arm and leg passed off, and he was enabled again to resume work.

In the January of 1874 he was affected with a pain in the back and down the front and outside of the legs, especially the right side. There was tenderness on pressure at the right side of the sacrum. The left leg and arm were slightly numb, and the tread with the left foot flat and heavy. There was facial paralysis of the left side and deafness of the left ear.

For some time past he had ceased all treatment, and he could not now be induced to resume it. He occasionally has slight attacks of twitchings of the limbs, but he is able to get about and follow his employment. His scalp is covered with nodules, more or less tender to the touch.

We have here in Case 1 a typical case of syphilis. From the



first moment the characteristic nature of the disease, the tendency to fibro-plastic deposit, is well marked in the large and permanent induration at the point of inoculation. There is also well exemplified another marked feature of the disease; indeed, a feature that is quite diagnostic, that is, the grouping or arrangement of symptoms. As a sonnet or ode is recognised by the number of its lines and the peculiar arrangement of its poetic expressions, so syphilis is distinguished from all other diseases by the grouping and arrangement of its symptoms. In themselves they possess no individuality of character and are common to many other diseases, but in no other disease is there the same sudden appearance, disappearance, and reappearance of symptoms. No prediction can be made as to the when, the how, or the where of the lesions. To use a musical simile, the metre is neither long nor short, but irregular. This flightiness of symptoms as existing in the later phases of the disease is well illustrated in Case 2.

If we classify the symptoms of Case 1 on the basis of treatment according to Dr. Broadbent's dictum, we are bound to consider the whole from first to last in the category of secondary symptoms, as they were always relieved by mercury and never by iodine. If we do this we are forced to consider late nerve lesions (evidently due to deposit of fibro-plastic lymph) as secondary symptoms. But such deposits and their lesions are distinctly classified as tertiary symptoms. We are therefore on the horns of a dilemma, and we are driven either to repudiate Dr. Broadbent's classification or his treatment.

If we interpret this case on the theory that syphilis is a fever of which the tertiary symptoms are the sequelæ we are equally in a dilemma, for we have then to accept the possibility of a fever not of weeks or months, but many years' duration. But supposing we only consider the first part of the attack as the fever and the second and later manifestation as the sequelæ, we still have to admit the possibility of a fever passing off and its sequelæ coming on after an interval of two years' perfect health, while one of the eruptions of the fever, the scaly and papular rash, manifests itself four years later still.

That in some respects the disease resembles a fever and is

occasionally, but not always, ushered in by febrile symptoms is true, but to make one disease the analogue of the other is incorrect and liable to mislead. The one disease is temporary, regular in its course, and definite in its duration, and to a certain extent independent of treatment. The other is irregular in its manifestations, indefinite in duration, more or less permanent, and very amenable to treatment. One circumstance, however, invalidates the comparison, and places the disease in an entirely different category, and that is its hereditary character.

From what has been adduced I think it will be admitted that syphilis is neither a fever, nor an inflammation, nor a diathesis, but a little of each. Too angular and many-sided to fit into any all-round system of classification, its symptoms may yet admit of some general plan of arrangement not entirely artificial. A blood disease due to the introduction of a living virus into the system, we have immediate functional disturbances of a septic character which might well on the basis of their causation be termed primary. The fibro-plastic condition of the blood, however, frequently produces change of tissue, and thus are originated a further series of disturbances depending on the tissue or organ which may be the seat of the deposit. These symptoms, as being of secondary causation, might also not inaptly be termed secondary. But there is yet another link in the chain of cause and effect. Deposits of nodules or small gummata in the coats of an artery may so far diminish the blood supply as to lead to the degeneration or death of the part supplied by it, or by direct pressure they may cause absorption or organic changes in structures or organs. From such causes arise softening of the brain, necrosis of bone, amyloid degeneration of organs and other lesions which are entitled to the appellation of tertiary, and are the true sequelæ of the disease. The virus once admitted into the circulation there exists the possibility of the *complete* chain of symptoms arising. Whether the disease stops at the first causation or advances to the third will probably depend on constitution and the early and persistent adoption of treatment.

Dr. Broadbent says, affections of the nervous system chiefly occur in those in whom the earlier symptoms have been slight,

transient, or absent. As these are generally the cases that receive either late, slight, or no treatment, the occurrence of secondary and tertiary lesions may perhaps be regarded as resulting not from the slowness of the attack, but the slowness of the opposition given to the development of the virus in the blood. If this inference is correct an early and efficient treatment becomes a question of vital importance.

What the treatment should be is still a matter of dispute. The weight of evidence seems to be with the teaching of Mr. Jonathan Hutchinson,—that while the system is under the direct influence of the poison mercury is the remedy.

Whether mercury destroys the virus and is thus a true specific, or whether it counteracts the tendency to the fibroid condition of the fluid, is questionable, but that it causes the rapid absorption of fibro-plastic deposits and modifies the course of the disease is beyond dispute.

When the tissues are the seat of a more permanent and indurated deposit iodine seems to be more efficacious; also in those later stages of the disease where the true inflammatory condition of the blood has given way to degenerated state. Frequently the presence of tissue change and blood poison may coexist, and then perhaps a combination of the two drugs may be more useful than either alone.

The tertiary lesions, unlike the primary and secondary, being permanent and organic, of course admitted of no specific treatment.

## ON THE TREATMENT OF SIMPLE FRACTURE OF THE SHAFT OF THE CLAVICLE.

BY FRANCIS VACHER, BIRKENHEAD.

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THE fracture which commonly results from a fall on the shoulder or other form of external violence applied directly or indirectly to the acromial extremity of the clavicle, is of such frequent occurrence\* it must often engage the attention of most members of the profession, not excepting those who see comparatively little surgical practice, and yet how to put it up with a fair chance of obtaining a perfectly blameless union is a question which has not hitherto been satisfactorily answered.

As a rule, it is singularly easy to diagnose, for, as Mr. Syme says, "the pain, swelling, mobility, and crepitus of the broken part, which is usually about the beginning of the acromial curvature, readily betray the injury, which is rendered still more obvious, by the sternal extremity of the bone being drawn up by the sterno-mastoid muscle, and the shoulder being depressed, brought nearer the sternum, and rendered more prominent forwards by the action of the *pectoralis major* and *latissimus dorsi*, assisted by the weight of the limb." No less easy is the treatment theoretically, the indications being briefly to raise the acromial portion of the bone to a level with the sternal, and retain it *in situ* by keeping the shoulder drawn upwards and outwards and backwards, but these indications are exceedingly troublesome to fulfil, as is evidenced by the many ingenious and complicated contrivances designed for this purpose, and the admitted inefficiency of even the best of them.

\* According to the statistics of the Middlesex Hospital, as given by Messrs. Flower and Hulke, in Holmes's 'System,' vol. ii, compiled from the experience of sixteen years, the clavicle is more frequently broken than any other single bone.

The objection to Desault's method, tying a cushion in the axilla, binding the arm down over it and elevating the shoulder by a bandage passed under the elbow, is, to quote Syme again, that "when the cushion in the axilla is secured so high and so firmly as really to serve the office of a fulcrum, it compresses the nerves and blood-vessels beyond endurance, and if it be allowed to descend so as not to do this, it increases the distortion, by separating the arm from the side," a remark which appears to be equally applicable to Liston's modification of this plan, figured in his 'Practical Surgery' and in Miller's 'System.' Dupuytren, also, writing of his experience of Desault's apparatus, states, "A great many patients could not support the constriction of the chest which it involved, without experiencing a sense of suffocation more or less distressing; in other instances, this pressure occasioned inflammation, and even sloughing, but almost invariably it was attended with intolerable pain." Besides, the bandage surrounding the chest is very apt to slip and require frequent readjustment, even when carefully stitched along the front and back over the axillary pad, as recommended by Mr. Christopher Heath; and the use of dextrine to render it immoveable, proposed by M. Blandin ('Medico-Chirurgical Review,' Oct., 1846) or starch, or any kind of plaster, is in many cases directly contra-indicated.

Boyer's plan of treatment (this surgeon fastened a thick pad in the axilla, and fixed the arm and kept it close to the trunk by lacing to the lower part of the limb a piece of quilted cloth furnished with four straps corresponding to as many buckles on a linen waist-belt or girdle), though it does not compress the chest, and is not liable to slip, is in other respects as imperfect as Desault's.

Intrinsically the same as Desault's also is the apparatus devised by Dr. S. H. Coale, of Baltimore, noticed in 'Cooper's Dictionary of Practical Surgery,' and Ellis's well-known apparatus, consisting of a crutch, with chest-belt and shoulder-belt to keep it in position.

The extremely simple mode of putting up this fracture described by Velpeau seven-and-twenty years ago ('Gaz. des Hôp.,' No. 115), *i. e.*, raising the patient's hand up to the sound acromion,

the affected shoulder being thus forced backwards and upwards, and bandaging from the axilla of the sound side across the back to the broken clavicle, then round and round over the arm, and finally covering the whole with a layer of dextrine-moistened bandage ; whatever merits may be claimed for it, is defective in so far as it only fulfils two of the three essential conditions required. Mayor's sling, and Mr. J. Duncan's curiously shaped jean contrivance, have the same faults.

Fastening the forearm, semiflexed, behind the back, as proposed by M. Pelissière, and the recommendation of Professor Gordon ('Dublin Quart.,' 1859), to extend the injured arm downwards over an axillary pad and firmly bandage it to the trunk, permanent extension being kept up by means of a band fastened above to the forearm, flexed at right angles, and below around the perineum or thigh, would seem to be equally objectionable.

The treatment by figure-of-8 bandage, by two handkerchiefs tied round the shoulders, looped into one another and tied together across the back (as shown in 'Druitt'), by the clavicle bandage, of which there is an illustration in Sir Astley Cooper's 'Treatise on Dislocations and Fractures of the Joints,' by padded shoulder-belts with or without Mr. Simpson's sleeve addition referred to in Fergusson's manual, or by the T-shaped back splint, though certainly more likely to prevent deformity than Desault's or Velpeau's or allied apparatus, labours under the disadvantage of being very ill borne.

It is hardly necessary to allude to such antique inventions as Heister's iron cross, the leather strap suggested by Brunninghausen, or the corselet of Brasdor. The latter appears to be the only one of the three ever appreciated by English surgeons, and they are all, as Boyer tells us, modifications of the figure-of-8 bandage, and not a bit better.

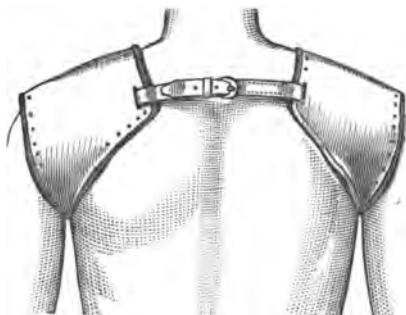
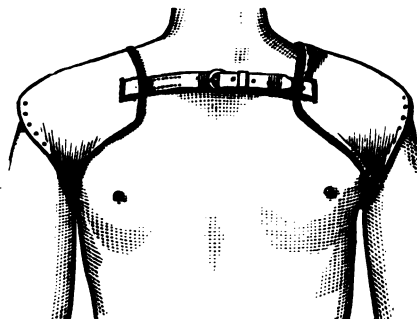
Mr. Bryant, summarily disposing of the ordinary methods of treatment by remarking that "the old plan of fixing the pad in the axilla and the figure-of-8 bandage is a delusion, and a very uncomfortable one," recommends placing a pad over the blade of the scapula below its spine, and binding this bone firmly to the thorax by broad strips of strapping obliquely encircling half the

chest, at the same time supporting the affected arm in a sling, drawing the hand upwards towards the opposite shoulder ; a plan which differs little from Velpeau's, and is clearly chargeable with the same failing.

Indeed all the divers suggestions, ancient and modern, for treating this fracture, and I have hardly named a tithe of them, are probably with very few exceptions modifications or combinations of the four representative treatments, the figure-of-8 bandage, Desault's, Velpeau's and that oldest, simplest, and best means of dealing with the injury (if only patients could be induced to submit to it) treatment by the recumbent position in bed. Now, as neither Desault's nor Velpeau's nor similar appliances keep the acromial fragment of the clavicle in the position requisite for obtaining regular union, and as very few people are so far masters of their own time as to be able to spare two or three weeks in bed on account of a broken collar-bone, most surgeons sooner or later have recourse to some form of apparatus on the principle of the figure-of-8 bandage. The tightness, however, with which it is necessary to apply this bandage is almost certain to produce excoriation, especially of the free margins of the anterior walls of the axillæ ; and even when soft silk handkerchiefs, quilted fillets, or well-stuffed shoulder-belts are used in place of a plain bandage, the galling is often so severe as to become intolerable.

Having, after repeated trials of Desault's and other apparatus, been disappointed with the results, and found that when my patient was an adult and the fracture between the attachments of the *sterno-cleido-mastoid* and *deltoid*, it was impossible to prevent the inner fragment from over-riding the outer except by bracing back the shoulders, and yet that any purely annular pair of shoulder-clasps, from which to effect the needful retraction, were for the reason given unsuitable, it occurred to me that metal caps which would take a firm hold of each shoulder might accomplish the object sought.

Accordingly, I had made for me, in March, 1872, the simple apparatus here figured. It consists of two sheet-tin shoulder-pieces or caps, soldered at the most dependent parts, where they are strengthened by stout brass wire over which the tin edges are



turned. They are carefully shaped to fit the parts they grasp, having been constructed from a gutta-percha pattern I took great pains in preparing, are lined with wash-leather quilted over thick felt, and are connected together by straps and buckles as seen in the cuts, the anterior strap and buckle being merely to keep the caps from tilting.

Each cap measures five inches across the top, and a trifle broader where the straps are attached; the free margin directed inwards is twelve inches, that directed downwards and inwards fourteen inches, and the circumference taken at the outer border sixteen and a half inches. The weight of the pair inclusive of straps, padding, &c., is just twenty-four ounces.\*

\* In my zeal to have the shoulder-joints firmly laid hold of, I am conscious I have made my caps needlessly clumsy; thus they project outwards nearly an inch and a half more than is necessary, and are undesirably full in the front, so that an equally efficient and much lighter apparatus might easily be contrived.



They are exactly accommodated to the size of the patient's shoulders by adding to their lining one or two layers of lint, and the cavities of the axillæ are filled in with pads to any required thickness by winding long strips of lint round the soldered portions of the caps. The pad on the injured side, being always made fuller than on the sound side, though it cannot press unduly on the contents of the axilla, is a very efficient fulcrum over which the head of the humerus is drawn, carrying the scapular and external fragment of the broken bone outwards. Bracing the shoulders back by means of the posterior strap and buckle, and supporting the forearm on the injured side by a handkerchief suspended from the neck, completes the reduction of the fracture, and fixes the acromial fragment of the clavicle in the position attained. When the scapula is not sufficiently bound down by the posterior plate a small pad may be introduced beneath this part of the cap. As regards the anterior strap and buckle, it is perhaps best to fasten it loosely as soon as the caps are imposed, and readjust it after the retraction of the shoulders.

I am prepared to hear that my apparatus is but another addition to the many trifling modifications of approved methods of treatment such as have from time to time sought to attract the attention of the profession since the days when Ledran, David, and Moscati were the recognised authorities on the putting up of clavicular fracture. It is not contended the appliance is more than this. All I claim for it is that if it be skilfully employed it will place and retain the acromial half of a broken collar-bone in a position very closely approaching its position before fracture, without galling the patient's skin, compressing the axillary contents, or interfering with the free action of the chest; and those who have hitherto felt the want of something to do this I am confident will welcome my suggestion.

I have used the instrument in several cases, the subject in each instance being a strong muscular man, and although such force was used in putting up one patient that after two or three days one of the caps broke at the soldering, the pressure had not been complained of as very painful, nor was there physical evidence of it. But, of course, traction, which would be quite intolerable when

exercised on a line, may be almost unfelt when made on a broad surface.

If a surgeon were to attempt to reduce a simple fracture of the clavicle by drawing the shoulders back with his index fingers only, he would distress the patient and yet fail to accomplish his object; reducing the displacement, however, is not hard if he firmly grasp a shoulder in each hand. Thus it is all text-books tell us reduction of this fracture is easy, but keeping it reduced is difficult. In other words, what it takes two hands to draw into position can scarcely be maintained there with two narrow fillets.

As I have found the weight of the slung arm generally sufficient to keep it fairly well at the side, the patient can wear his shirt and a loose coat while under treatment; and as often as required he may be laid on his back, and the axillary pads withdrawn and renewed. The apparatus is, therefore, exceptionally cleanly and comfortable, and, I assume it will be conceded, neither complicated nor likely to be very costly.

In conclusion, I may remark that though the shoulder-caps do not altogether prevent the mobility of the sternal fragment of the clavicle, they, in common with all modifications of the figure-of-8 bandage, restrain it somewhat, and if the patient be directed to keep his face turned a little towards the injured side for the first few days, no deformity need be feared from this cause.

## OVARITIS.

BY FRANCIS IMLACH, M.B., LIVERPOOL.

A RECENT essay by Dr. Matthews Duncan,\* though in small compass, gives a most complete clinical picture of this disease. The present paper is based on a limited number of cases I have myself observed, and includes only such parts of the subject as I have as yet been led to study in connection with them. It proceeds on the assumption that the disease is one which may usually be detected by physical examination, but not by consideration of symptoms; and it dwells chiefly, though not entirely, on its frequent association with similar disease of neighbouring parts, and on the difficulties and doubts met with in actual diagnosis. Two important parts of the subject are excluded, the etiology and the pathological varieties of the inflammation. What may be termed a popular account of the etiology has so often been given in the books that repetition is needless, and any more scientific description is scarcely possible. Of the pathology of the disease I am unable to speak confidently from want of sufficient experience. But this only may be noted, that the term ovaritis, when used in a clinical sense, includes and often confounds the pathological states of congestion and inflammation; that it does not usually imply abscess, and that the congested or inflamed ovary is often notably increased in size. Kiwisch and West say it is extremely unusual for the ovary to be enlarged by inflammation of its stroma to more than double its size; but, as has been remarked, these post-mortem results do not afford an accurate limit of size for the living organ. It is, in fact, extremely difficult to fix such limit, and as we have no good comparative study of congestion and inflammation in different organs there is no analogy to guide us.

\* 'Edin. Monthly Med. Journal,' August, 1871.

The symptoms of ovaritis are, so to speak, vague and unsatisfactory, yet they are of great practical importance, and are the chief clinical test of acuteness and chronicity. There is probably always pain during, at least, some part of the course of an ovaritis. It may range from slight general pelvic discomfort to intense agony at a single spot; and while the former perhaps accompanies well-marked simple ovaritis of one side as shown by examination, the latter is associated with nothing abnormal that is discoverable by like means. Indeed, for these latter cases Dr. Churchill\* has suggested the term 'ovarian irritation,' implying intense ovarian pain without corresponding change of structure—simple neuralgia. His paper is a companion picture to that of Gooch on 'Irritable Uterus.' Some such phrase is useful and may be held to include cases of inflammation of the ovary or other parts which we are unable to diagnose, and perhaps some others. Aching in the back, shooting pains in the thigh on the affected side or even the other, a peculiar sickening sensation in the region of the inflamed ovary, often well brought out by pressure during examination of a recent case, pain at the os uteri, dysmenorrhœa, dysuria, painful defæcation,—all these and others of more doubtful significance are found variously associated in different cases.

"In the menorrhagia," says Dr. Duncan, "if it may be so called of ovaritis, the flow is not excessive within any stated time, but is long continued. Besides, bloody discharge may take place at irregular times. These so-called disorders of menstruation appear to be among the most characteristic phenomena of ovaritis." This is an apt account of the menstrual discharge in the majority of the cases with which I am acquainted. In some instances there is a history of such an amount of uterine hæmorrhage at the commencement of the painful symptoms that one is left in doubt as to whether or not there has been early abortion.

The frequency of abortion during ovaritis has been ascribed to increased reflex nervous irritation, but this is little else than a crude schematic adaptation of physiological theory to pathology; there is little positive evidence of such increase, and no limitation of

\* 'Dublin Quarterly Journal of Medical Science,' July, 1851.

the doctrine by exact observation or experiment. The effect of inflammation of the ovary upon its nervous relations is practically unknown. Hysteria is said to be frequently associated with ovaritis, but was not, I believe, well marked in any of my cases. I have seen in my father's practice a lady in whom, a few months after a severe confinement, exophthalmic goitre occurred simultaneously or nearly so with an acute ovaritis diagnosed on pelvic examination by a London practitioner. It is, however, impossible to say whether the ovaritis was merely coincident with or a cause of the Grave's disease, or finally one of its more manifest signs, like the bronchocele and exophthalmos.

The frequent association of ovaritis with similar pathological states of other pelvic structures, amply proved by clinical and post-mortem examination, shows it to be so many times a part only of a more generally diffused disease. Indeed the inflamed ovary seems to have, in ordinary, no such highly differentiated pathology as its physiology would lead us to expect. Its grand function of ovulation appears to impress the inflammation with few notably peculiar conditions as to intensity, duration, or course; and it is said the function may be performed and the uterus carry the ovum to full term, while both ovaries are considerably inflamed. Moreover association in disease seems to be determined not so much by association in development as by proximity in position. Peritonitis and congestion or even inflammation of subjacent organs and tissues constitute the elementary pathology of these allied diseases. Contractions and adhesions sequent to such peritonitis, and according to its character primary or secondary, direct or by connecting bands, cause constrictions, displacements, and distortions of the subjacent parts. Hence associated with ovaritis we find matting of intestine, inflammation of the various pelvic viscera, adhesions of an ovary to an unusual part of its broad ligament, to the fallopian tube, to the fundus, side or posterior wall of the uterus, even to the ovary and broad ligament of the opposite side, involving extensive displacement of both broad ligaments and fallopian tubes,\* flexion of the uterus, its adhesion to the sacrum &c. Dr. Duncan doubts the frequent

\* A case is described by Dr. West in 'Diseases of Women,' 3rd ed., vol. ii, p. 45.

association of inflammation of the pelvic cellular tissue with ovaritis.

Among twelve cases which I observed and noted while house-surgeon at the Lying-in Hospital of Liverpool, the right ovary alone was affected in five, the left in four, and both together in three. The uterus was normal in three cases, retroflexed in three, anteflexed in two (the ovary being fixed to its posterior wall in one of them), and was once fixed low in the left of the pelvis, once procident (in a young woman), and once enlarged with fibrous tumour. Another case, with the post-mortem examination, I shall narrate at length later on. The histories of these women were not sufficiently reliable to allow of any definite statement as to their fertility. While some had only abortions or miscarriages in rapid succession, others had only viable children at long intervals.

One complex case, easy of diagnosis and ending in recovery, will be given in some detail to illustrate the disease. With it may be compared Dr. Churchill's widely known case of recurrent retroflexion of the uterus at each menstrual period, and Mr. Lawson Tait's\* case of uterine retroflexion associated with double ovaritis. It is, shortly, a history of ovaritis and of a uterus retroflexed after each menstrual period while the ovaritis lasted, with such irregularities as repeated clinical investigation discovers in the course of all diseases.

Mrs. A. W—, æt. 25, married four years; one child soon after marriage, premature but still living; no miscarriage. Nearly two years after marriage had an almost constant red discharge for three months, and during a week of this time her urine was drawn off through a catheter. Twelve months afterwards was laid up with rheumatic fever for eight weeks, since which time, but especially during the last three months, she has had constant pelvic pain and feeling of weight. Menstruation occurs every month, lasts eight days, and of late especially has been profuse. Two days before its occurrence the pain, chiefly in the left lower quarter of the belly, so increases that she takes to her bed; during the first day of its occurrence the pain remains as bad as ever, but lessens considerably on the second.

\* Hasting's Prize Essay, 'British Medical Journal,' 1874, p. 735.

October 26th, 1872.—Some ill-defined dulness in the left inferior quarter of the abdomen. *Per vaginam*, the left ovary, though but little enlarged or displaced, is readily felt; it is extremely tender, and when pressed there is increase of the peculiar pain of which she complains. The right ovary cannot be felt. The uterus is mobile but retroflexed; pressure on the cervix so as to increase the flexion causes pain of a kind entirely different from that usually experienced; a well-bent sound enters backwards two and a half inches, and is reversed with difficulty and with pain to the patient.

November 13th.—Pain about navel so great that she keeps in the bent posture; left ovary mobile and in the same condition as before as regards size, position, and tenderness; uterus felt to be not retroflexed, but the sound was not passed.

30th.—In the region of the left ovary and fixed to the left side of the pelvis is now a tumour the size of a small orange, hard but to some extent indentible by the finger, and tender (in part, probably, matted intestine); uterus mobile and not adherent to the tumour; sound easily enters in the normal direction for two and three quarter inches, and its introduction causes no pain.

December 6th to 12th.—Menstruation with considerable but scarcely profuse discharge; pain greatly diminished.

14th.—Adherent left ovary much smaller than on last examination, harder and less tender; uterus pushed to the right and completely retroflexed; its fundus is easily replaced by the finger, but again descends when the support is removed; the sound, passed four days after, demonstrates the retroflexion,—length of uterus nearly three inches.

January 1st, 1873.—Expects to menstruate in a week; left ovary still to be felt, but is not enlarged and has little tenderness; uterus mobile and not retroflexed; sound enters fully three inches.

February 7th to 13th.—Menstruation.

19th.—Left ovary distinctly felt, mobile and somewhat more tender than formerly; uterus mobile and retroflexed; sound enters three inches and easily rectifies the position.

March 5th.—Expects to menstruate in a week; has been

suffering from severe bearing-down pains like those of labour; left ovary as before, mobile and tender; uterus acutely retroflexed, the fundus tender, and when pressed the pain she now suffers is increased.

26th.—Ceased to menstruate a fortnight ago; still much occasional pain; left ovary not to be felt; mobility of uterus restricted and only very slight retroflexion or none at all; sound enters three inches in the normal direction. Pelvic tenderness during examination is much diminished.

April 9th to 12th.—Menstruation; only three days, therefore, instead of eight or nine, as has been her habit; discharge profuse only on the first day, little pain before and none afterwards.

16th.—Left ovary felt as a small and nearly fixed mass, not now mobile, as formerly, not so distinctly differentiated, and not acutely tender; uterus not retroflexed and not tender.

Of course the patient was treated. She had bromide of potassium, bichloride of mercury, henbane, and aromatic spirits of ammonia in their turn; but for my part I prefer to regard the case simply as a piece of natural history.

I am unable from want of sufficiently definite observation to speak at length of the differential diagnosis of ovaritis from affections of the fallopian tube, inflammatory thickening of and cysts in the broad ligament, an inflamed small ovarian cyst or pedunculated subperitoneal uterine fibroid. The probability of error and its direction can only be guessed at for each individual case from its history, any peculiar results of examination, and from the personal liability to error from insufficient experience and delicacy of touch, and from preconceived opinion. I shall add, therefore, only a few general propositions concerning diagnosis.

It is of peculiar importance, indeed almost essential, that the bladder and rectum should be empty. It is rare that an ovary can be detected by simple palpation of one or other inguinal region. Vaginal examination is almost solely digital, though the sound sometimes assists in exhibiting the mobility of the ovary about the uterus. The normal position of the ovary is at the side of, but a little posterior to, the uterus, and between pelvic planes through its fundus and middle; but the lateral pelvic wall,



anterior to the synchondrosis and below the brim, is a safer guide. A mass from the size of a filbert to that of a walnut, in this region, is probably an ovary, especially when there is evidence of absence of fibroid growth of the uterus. If, in a young woman, such a mass can be felt by ordinary vaginal examination, that in itself is presumptive of ovaritis, and if it is acutely tender the diagnosis is made. In older women one ovary or even both may sometimes be felt by the finger, freely mobile and not enlarged or tender; this is no evidence of ovaritis, but demonstration of its absence. Adhesions greatly perplex diagnosis. Where a little-enlarged ovary is adherent to the side of the pelvis, with some inflammation in its vicinity, often no positive conclusion can be arrived at while that condition lasts. When the ovary seems to adhere to the uterus so that both move together and not one about the other, fibroid enlargement or flexion of the uterus are sources of doubt and occasions of error. Only a rough estimate of the size of the mass need be attempted. If the mass is granted to be an inflamed ovary, then that part of its outline which is traced by the finger over the wall of the vagina together with the freedom of its mobility (when non-adherent) yields a tolerably precise result. Often, too, by manual pressure from above or by the patient's involuntary efforts, the ovary is made to descend within easy reach. Combined external and internal examination is invaluable in showing that the supposed inflamed ovary is not only a knob or projecting part of a much larger mass, for example, an ovarian tumour, but is no fine measure of the size of the inflamed organ. The conditions of nicety are obviously absent; the abdominal wall may be from one to four inches thick, and the vaginal wall about half an inch; these two are several inches apart, and considerable force must be exerted to appose them; hence the ovary, say about the size of a shelled walnut, even if accurately adjusted between them, cannot be accurately gauged. While detection of an ovary in its natural position proves a mass elsewhere not to be that ovary, failure of such detection does not prove any ovarian displacement. With an ovary in Douglas' pouch pretty accurate measurement is possible by combined rectal and vaginal examination. Here the

organ is more within reach, the rectal and vaginal walls closely envelope it, their thickness is less, their pliability greater, and there is no tension of their attachments.

Another case, complex, difficult of diagnosis, and terminating fatally, will illustrate another phase of the disease.

M. A. M.—, æt. 33, married twelve years, four children; about ten weeks previous to examination had a so-called flooding which lasted several weeks, stopped for a fortnight, and then recurred. When I first saw her she had no discharge, but was troubled with dysuria and with great pains through her sides and back. The uterus was displaced slightly backwards and fixed by surrounding fulness. The infra-vaginal portion of the cervix was almost lost in the general succulence, and was tender but less so than the anterior swelling. From the anterior and right side of the uterus a firm ridge curved outwards and backwards; the finger could pass further along its posterior than its anterior wall. On the left side was a similar ridge, not so well marked nor so tender. The patient lay for eight weeks and then died. At the necropsy extensive old pleuritic and pericarditic adhesions were found. There was an encysted abscess in the right pleura containing from four to six ounces of pus, and small circumscribed abscesses were scattered throughout both lungs. The heart, liver, stomach, great mass of intestine, spleen, and abdominal peritoneum were natural. The right kidney was displaced upwards and inwards, but was not floating; otherwise both kidneys were natural. Matted folds of small intestine were adherent to the fundus uteri and enclosed a perimetric abscess in Douglas' pouch. The pelvic viscera were matted together; the uterus was natural; so were the fallopian tubes at their uterine extremities, but they could not be traced to their fimbriated extremities; the ovaries were with difficulty distinguished in the matted mass; they were enlarged to the size of a walnut and were riddled with purulent cavities; in the right one was what appeared to be a recent corpus luteum; the left broad ligament contained pus, the right one had inflammatory thickening but contained no pus; growing from the posterior surface of the left broad ligament was a ruddy papilliform body, the size of a large pill; the round ligaments were not affected;

the rectum was much thickened, and of gristly consistence; the bladder was not materially affected.

This case exemplifies the frequent necessity of giving an *open* diagnosis of pelvic inflammation.

There is no plan of treatment of this disease by which a cure can be ensured or even expected within any definite period. Rest in hospital or at the sea side, &c., from household cares and from sexual life, is beneficial. Dr. Rigby says of displacement of an ovary into Douglas' pouch, "our first indication will be to rouse the liver," and this has been copied into recent text-books. Some advise the use of Hodge's pessaries. I have seen them tried, and believe they do more harm than good. Among minor remedies, counter-irritation is occasionally useful, the sharp stinging pain of a blister satisfactorily directing the attention from the dull aching and more annoying pain in its vicinity. But where the pain amounts to agony blistering only adds to it. Here opium and hot fomentations give most relief. Administration of chloral during the period of greatest agony, as for example immediately previous to menstruation, is a coarse but often invaluable means of alleviation. Active treatment of concurrent uterine disease should, I believe, for the most part be suspended. But I have seen the menorrhagia stopped for a time by swabbing the uterine cavity with solutions of carbolic acid, perchloride of iron, &c. regardless of the ovaritis and without apparent ill effect. This plan may be recommended where the flow, even though it relieves the painful symptoms, is proving exhaustive.

## EAR DISEASE IN RELATION TO SCARLATINA, ETC.

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THE present epidemic of scarlatina appears opportune for drawing the attention of the profession to the great importance of the early recognition and treatment of any secondary ear affection occurring during the progress of the fever.

Of all febrile complaints scarlatina is probably productive of a greater number and variety of ~~nevels~~ <sup>nevels</sup> than any other, and frequently inflicts upon its victims some of the worst forms of disease with which the aural surgeon has to deal.

Of 390 cases of purulent discharge admitted under my care at the Manchester Ear Institution, 180, or 46 per cent., were due to the poison of scarlatina, and probably many more would be found to have been so produced could the history of the patients be more carefully inquired into.

Scarlatina, diphtheria, measles, tonsillitis, pneumonia, bronchitis, and pertussis, are frequent agents in the production of acute ear disease, and usually of the suppurative kind of inflammation.

With a large number of practitioners the idea that the state of the ear in scarlatina requires any care is hardly entertained, much less carried out; and yet many cases of scarlatina with marked symptoms of cerebral congestion, delirium, severe headache, convulsions, &c., owe the existence of these complications to a perfectly distinct but serious aural affection, the first suspicion of which is generally aroused by the appearance of a purulent discharge from one or both ears. In short, only when the mischief is done is it thought worth while to attend to the aural affection. My object in this paper is to point out, as

clearly as possible, and without presupposing any greater knowledge of ear disease than an average practitioner may be expected to possess, when, how, and by what treatment, ear complications in scarlatina may be best dealt with.

Dr. Roosa, in reference to acute catarrhal inflammation of the ears, says, "From the nature of things the general practitioner will see a good deal of this form of disease if he be on the lookout for it, since it occurs so often in the course of the exanthemata and in connection with diseases of the respiratory organs. It will be seen that there is nothing in the treatment of this affection that will prevent the usual care of the general disease. It is a great and often fatal error to wait the subsidence of the general symptoms before the aural ones are alleviated. They are quite as important as the most urgent constitutional disturbances. Indeed, they are often the unsuspected cause of most of the latter."

It is customary, when a patient suffering from scarlatina has symptoms of cerebral complication, to refer it to "an extension to the meninges of the brain," "feverish delirium," or some such indefinite explanation, without clearly recollecting that thereby is implied an extension of the throat inflammation through the Eustachian tube to the tympanum, producing suppuration with rupture of the membrana tympani and otorrhœa, suppuration of the mastoid process, caries of some part of the temporal bone, chiefly the petrous, pus effused on to the dura mater, inflammation of the brain coverings, and abscess in the brain substance.

The above may be and often is the usual order of attack in a severe ear affection secondary to scarlatina. In an adult the local attack will be at once felt and pointed out to the medical attendant, when the treatment to be mentioned should be adopted. It is, however, to children that I especially wish to refer, in whom this formidable disease is more frequent than in adults.

The inability to explain themselves, the great difficulty of ascertaining the degree of deafness and examining the state of the membrana tympani in children, make it all the more important to watch for any ear affection before a purulent dis-

charge has taken place. If in the course of scarlatina a child is seized in the night or towards morning with a sudden paroxysm of pain, in which it tosses its head about, pulling the hair, and attended by a violent fit of screaming, perhaps followed by convulsions, coma, or any signs of facial paralysis, we should at once have the ears examined.

The acute stabbing, darting kind of pain of acute suppurative inflammation of the middle ear is almost constant; days and nights are spent in great anguish; the cries of the child are of the most piercing description, and its attention cannot be drawn to anything about it; low moaning, restlessness, and exhaustion succeed, to be almost instantly relieved on the appearance of pus at the external meatus.

In diagnosing this aural affection from other less important infantile ailments and from primary brain disease we must especially notice the character of the screaming, whether the pain appears to be increased by movement of the child, by vibrations, by alteration in the position of the head, by loud noises, coughing, or sneezing.

In examining the ear Brunton's speculum should be used (by sunlight if possible), and the following appearances of the membrana tympani will be seen if the middle ear is already attacked. The membrana tympani is bulging outwards, of a dull leaden yellowish colour; the triangular spot of light visible in a healthy ear is absent; the manubrium of the malleus cannot be seen, but its position is indicated by a red line of enlarged vessels running backwards and downwards across the centre of the membrane, which has a moist, sodden look.

The auricle itself frequently becomes more or less tender, swollen, hot, and should the pus retained within the tympanic cavity fail to rupture the membrane it will pass on to the mastoid cells, and a red, tumefied, painful and œdematous condition of the mastoid process will be observed.

I need hardly add that the watch is heard very indifferently, and that a tuning-fork placed on the vertex will in cases where one ear only is attacked be heard most distinctly in the affected organ, but these tests will not be available for very young children.

The treatment to be adopted in cases presenting the symptoms and signs above described must be prompt and effectual. The membrana tympani should be incised through a speculum which I have designed and adapted to Brunton's. The incision should be made with a small arrow-headed lancet posterior and parallel to the membrane of the malleus, or, if the bulging be very marked, at the most prominent part.

The ear must afterwards be well cleansed by frequent warm-water douching for two or three days. The aperture thus made closes much more rapidly and completely than when the membrana tympani spontaneously ruptures; four to five days is the usual time.

Those who have not witnessed the remarkable abatement of previous alarming symptoms due to this timely operation will hardly credit the relief it affords.

Supplementary to this treatment leeches applied in front of the tragus, warm-water douches every half hour, the throat frequently brushed with a saturated solution of chlorate of potash, and the neck protected by warm poultices, will be called for should pain and discharge about the ear continue. No syringing of the ears should be permitted, but they may be filled after the use of the warm-water douche with a warm solution of sulpho-carbolate of zinc (two grains to the ounce).

One word as to the chronic otorrhœa left by scarlatina and other causes. Patients are constantly coming to public institutions for diseases of the ear and stating that their medical attendants, men of undoubted ability in their profession, have told them that "a running from the ears must not be stopped," that "it will get well as they grow older," or that it was better "not to meddle with the ears," and patients have come under my notice who have been persuaded that a discharge from the ears is a salutary drain and saves them from untold miseries. This mistaken notion cannot be too soon removed.

Whilst otorrhœa continues there is danger, and every effort should be made to arrest it if possible. Sir W. Wilde has graphically said of otorrhœa, "We can never tell how, when, or where it will end, or what it may lead to."

No authenticated pathological records can be found to support the erroneous doctrine of both profession and laity that it is dangerous to stop any running from the ears.

In conclusion, I may quote Mr. Hinton, who says, "Much less permanent deafness, even less deaf-mutism, will affect the people when the profession make it part of their duty to study the condition of the tympanum in every case of scarlatina, measles, and hooping-cough. There can be little doubt, I think, that the mortality at least of scarlatina might be appreciably diminished by treatment directed to the ears."



## CASES OF DISSECTING ANEURISM OF THE ARCH OF THE AORTA.

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THE term "dissecting aneurism," first used by M. Maunier in 1802, is commonly applied by authors to that form of lesion in which the blood ruptures the internal coat of an artery, and separates the several layers of the middle coat, or the middle from the external coat to a greater or less extent. It will be evident that this definition will not include one of the following cases (case No. 3), where, although theoretically there may have been some slight separation of the edges of the opening, yet practically the rupture of the three coats took place simultaneously, and therefore left no time for the dissecting process to take place.

We will first shortly detail the symptoms of the cases, next the results of the post-mortem examinations, and lastly, we will draw certain conclusions from these, and other published cases as to the nature, causes, symptoms, &c., of this lesion.

CASE 1.—T. R—, æt. 68. Had been an inmate of the Liverpool Workhouse for several months previous to his death, during which time he was employed whitewashing and doing other light work. He suffered from chronic bronchitis, occasionally coming under the notice of the medical officers when any exacerbation of the affection recurred.

On December 20th, 1872, he complained of a pain on his left side, owing, he said, to his having caught a fresh cold. He asked for a plaster, a remedy that seemed always to have given him relief; one was ordered, and he went away contented. Half an hour after, he was brought back; the pain had become more severe, his breathing was much distressed, and his countenance showed

that something very serious was the matter. He was immediately ordered to hospital. In attempting to rise from his chair, he seemed to faint, slipped from the chair to the floor, and died in less than a minute.

CASE 2.—L. G—, æt. 69, an epileptic, who had been in the epileptic ward of the Liverpool Workhouse for several years. On the evening of March 31st, 1872, he complained of not feeling well; aperient medicine and rest in bed were prescribed. He, at that time, did not complain of any pain in the chest. He felt better during the night, and next morning was getting out of bed when he complained of a pain in his side, staggered, fell back partly on the bed and partly on the floor, and before the attendant reached his side he was dead.

CASE 3.—S. R—, æt. 38, a sailor, was admitted to the Liverpool Workhouse Hospital, in March, 1873, suffering chiefly from severe orthopnœa. On auscultation a loud aortic regurgitant murmur was heard. Next morning he was quietly talking to a patient in the next ward, when he suddenly asked his friend to place his hand over his heart, "to see how rapidly it was going," when he sank on the floor and died immediately.

*Post-mortem examination.*—CASE 1.—On opening the chest the anterior mediastinum and pericardium seemed to be filled with blood. After clearing away several ounces of blood from the anterior mediastinum we found an irregular opening in the outer coat of the aorta, situated a little above the origin of that vessel; *no blood* was found in the pericardium, but the two layers of that sac were separated over all the anterior surface of the heart down to the apex, such a quantity of blood being effused as made the anterior wall an inch thick. A layer of coagulated blood extended beneath the outer coat of the aorta to beyond the origin of the left subclavian, forming a channel in which the coagulated blood bathed two thirds of the middle coat on its anterior and inner aspect. Beyond the origin of the innominate artery a transverse slit was found in the inner and middle coat of the aorta three quarters of an inch in length. It was situated on the inferior surface of the transverse portion of the arch. The aorta was dilated and extensively affected with atheroma, the middle

and internal coats were so brittle transversely that the slightest pressure with the finger was sufficient to make an opening. All the valves of the heart were diseased, the walls of the heart being slightly hypertrophied and the ventricles dilated.

CASE 2.—In this case the post-mortem appearances were very similar. The blood had extended upwards and downwards for nearly the same distance, and no blood was found in the pericardium, but the case differed in the opening being beyond the origin of the left subclavian, and that nearly all the blood in the man's body had been discharged into the left pleura. The brain, especially, was completely emptied of arterial blood, the sinuses still retaining a very small quantity; the coats of the vessel did not seem so extensively diseased as in case No. 1, but the heart showed more hypertrophy. All the valves were diseased.

CASE 3.—In this case the place of rupture was on the right side of the aortic arch, just above the valves; the blood was discharged *into* the pericardium, that sac being completely distended with coagulated blood. The opening in this case differed in shape from the other two; it was irregularly circular, instead of the transverse slit. There was no separation of the outer coat of the aorta above the opening. The heart was hypertrophied and dilated; the mitral valves were especially affected with disease, the aortic much less.

*Remarks.*—In looking over the literature of the subject we find a goodly number of cases on record. Dr. Peacock, in the fourteenth volume of the 'Transactions of the Pathological Society,' analyses eighty cases. On examining all the books at our command we can collect fifteen more, making the total of ninety-eight.

From these cases we may draw the following conclusions:

1. That dissecting aneurism generally occurs in advanced age, and oftener in men than women.
2. That its onset is mostly sudden, during or after moderate exertion, and that death occurs sometimes instantaneously, nearly always rapidly.
3. That the disease is, except in a very few instances, accompanied by one or more of the following lesions, viz. atheroma and

dilatation of the aorta, valvular disease of the heart, hypertrophy and dilatation of the heart.

4. That rupture occurs most frequently in the thoracic aorta, the frequency being greatest in the first part of the arch.

5. That the sac of the aneurism may be very small, generally extending a few inches along the vessel; in some instances it has reached to the iliac arteries, or even in one instance to the popliteal. In none of the cases does the sac seem to have extended so far into the layer of the pericardium as in Cases 1 and 2.

6. Death occurs most frequently from rupture into the pericardium. It also occurs from rupture into the mediastinum or pleura.

7. That the line of direction of the rupture in the internal and middle coats may be transverse, longitudinal, or oblique; that it varies much in extent, in some cases separating these coats all round. The predominant direction seems to be transverse. Frequently there are several ruptures.

8. That the symptoms consist of a tearing pain in the region of the vessel, an anxious countenance, collapse, &c., but these accompany the rupture of any aneurism, and contain nothing that can assist the diagnosis.

9. That three cases having been found in the practice of the Liverpool Workhouse Hospital, in less than two years, would lead one to suspect that a great many cases of sudden death from so-called "cardiac" disease may have been instances of this lesion, especially as we so frequently find the accompanying lesions in old men, who have died from other causes.

## THE DIFFERENTIAL DIAGNOSIS OF UNAVOIDABLE AND ACCIDENTAL HÆMORRHAGE, AND THE TREATMENT OF THE LATTER.

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IN a recent communication to the Liverpool Medical Society I considered at length the application of vaginal stethoscopy to the exact diagnosis of the placental implantation, and pointed out its value as a means, not only of distinguishing the existence of placenta prævia *when the os uteri is not sufficiently dilated to permit of digital examination*, but also the differential diagnosis between a centre for centre and a marginal presentation. Now, I am desirous of drawing attention, in the first place, to the application of the same mode of diagnosis differentially, in distinguishing between the so-called *accidental* and *unavoidable* hæmorrhages. The term *accidental*, introduced by Dr. Rigby of Norwich in his celebrated memoir, is descriptive of the cause of this complication when the placenta is normally placed in the fundus or middle segment of the uterus, a condition justifying the expectation of the natural termination of the parturient condition, but suddenly interrupted accidentally by sudden shock, a fall, a blow, fatigue, violent exertion, or even a fit of laughter, or by such pathological conditions as excessive action of the utero-placental vessels, fatty or calcareous degeneration of the placenta, general plethora, spasm of the uterus at the placental seat, and the natural contractions of the uterus, as described by Braxton Hicks, during the latter months of pregnancy, or in labour, especially when sudden and rapid at too early a period, and in cases of twins and dropsy of the amnion. A good

example of the occurrence of this accident in a twin pregnancy I shall by and by relate to you.

In the first place, let me draw your attention to the differential diagnosis of accidental from other forms of uterine hæmorrhage. I shall follow the usual natural divisions of accidental hæmorrhage into two distinct forms, the external and the internal; the latter not manifesting itself by any external or vaginal discharge of blood, while the former does so. But this discharge of blood per vaginam may be indicative of either the unavoidable or the accidental form of hæmorrhage, and hence it is necessary to determine which of the two it may be with precision and certainty. If it arise in the sixth, seventh, or eighth month of pregnancy, and if we see the case at the very beginning of the attack, before the os uteri is open in the smallest degree possible for the admission of the finger, the only method laid down by systematic writers, and even by the latest, Leishman of Glasgow, is the old distinction laid down by Rigby, that in accidental hæmorrhage the flow stops during uterine contraction, and in the unavoidable it is increased. But in both forms there are frequently no pains, and the distinction, though theoretically true, is vague and uncertain in its application in practice. What then? In head presentations a well-educated *tactus eruditus* may enable the accoucheur to determine the presence of the fœtal head pressing on the wall of the lower segment of the uterus, and by inference the absence of the placenta. This would be sufficient if it were ascertained as a matter of absolute certainty that there was no cotyledon of the placenta verging over the internal os, and if ballottement confirmed the correctness of digital touch. Yet all these forms of diagnosis are liable to error, and their value is a comparative one, dependent upon the skill and acumen of the practitioner. But vaginal stethoscopy enables us to take another step in advance of the usual methods. For a full description of this method of diagnosis I must refer you to my original paper, published in the 'Edinburgh Medical Journal,' November, 1872; and notwithstanding the claims of priority made by Dr. Keiller, and others in Edinburgh on his behalf, the absence of their being able to point to any published statements upon this subject leaves me no alternative.

but to lay claim to the practical application of this method of exact physical diagnosis. If there is complete absence of the placental bruit in the vaginal excavation, or rather in the whole of the roof of the pelvic strait, the placenta is not fixed there, and the hæmorrhage is not unavoidable. This view will be confirmed if abdominal stethoscopy determines the situation of placental implantation to be over the middle or fundal zones of the uterus. And here it is well to point out how the two forms of hæmorrhage graduate into each other by certain links of connection, so that at one stage of the gradation it would be well-nigh impossible to decide whether the hæmorrhage arose from so-called accidental or unavoidable causes. This is seen when only a few vascular radicles extend from the placenta, when it is implanted low down in the uterus, across the inner orifice of the os internum. This forms, as it were, the connecting link between the two, and it is well to remember it, for the same treatment is applicable to the partial placental presentation form of hæmorrhage and the accidental.

The second or internal form of accidental hæmorrhage has also been well termed latent so far as the absence of external bleeding is concerned, but the symptoms are generally too well marked and alarming to be so designated. A patient so attacked may have no premonitory symptoms otherwise than an uneasiness in the lower parts of the abdomen, back-ache, perhaps restlessness and an anxious expression of countenance, or there may be an utter absence of all symptoms, and the very first indications of the attack may be sudden giddiness, cold perspiration, and rapid fainting, perhaps attended with a more or less well-marked rigor. If she is seen shortly after, and the hand is placed over the abdomen, the uterus will be found to be hard, and it may be nodulated, from distension, in proportion to the quantity of blood extravasated; and on recovering from faintness this gives rise to a feeling of tension and pain in the womb, accompanied by the abdominal expression of countenance, jactitation—neither being able to rest in bed nor sit up—and vomiting. Digital examination of the os uteri will reveal nothing, and the accoucheur will only be able to arrive at his diagnosis by an appreciation of subjective symptoms

and by abdominal touch, as here stethoscopy will be of no service whatever if the placenta has become completely detached from the middle or fundal zones of the uterus; and even supposing a circumscribed placental bruit could be detected, indicating only partial separation, it would not be of any practical value. Moreover, the restless state of the patient would debar the possibility of careful and correct stethoscopy. The condition is a most dreadful and perilous one for the patient, and I hardly know of such another which throws at once such a weight of responsibility upon the accoucheur; for upon his decision and promptness of action, upon the judicial clearness of his judgment as to the real state of the case, depends whether active interference—speedy delivery—is demanded immediately, and perhaps at terrible risks, or whether prudent delay can be practised, but a delay of such a momentous character that it may be for life or for death. These are questions which I shall now proceed to discuss, and illustrate under the subject of treatment by condensed reports of cases showing the various phases of the accident which I have either met with in my own practice or of which I have availed myself from the practice of others.

In considering this part of my subject let me first glance at the simpler forms of accidental hæmorrhage before passing on to the more severe and dangerous types. Although not classed under this head in systematic works, the most common is that of simple miscarriage or placental apoplexy, where it is of interest to notice that the extravasation of blood begins, not often at the marginal attachment, but towards the centre, and extends towards the circumference, where it may or may not escape by detaching the membranes downwards to the os uteri. These cases are of such frequent occurrence that no difficulty need be experienced in testing the correctness of these views; and they are important, for in the more rare and dangerous forms of the disease towards the latter months, or even at the full term, of pregnancy, the same laws hold good, and placental detachment takes place precisely in the same way, although frequently arising from different pathological causes, such as fatty degeneration, chalky deposit, syphilitic or tubercular disease, in contradistinction to more common causes of early abor-



tion, such as sudden shock, mental or bodily, uterine displacements or uterine fibroids, or disease of the cervix with an absence of placental disease.

With regard to the treatment of this early form of accidental hæmorrhage, there are only two indications which ought to be constantly before the minds of practitioners—first, to prevent loss of blood by plugging, and second, to empty the uterus as soon as it can be done with safety to the patient, that is, whenever the dilatation of the os uteri will permit of it. So treated, miscarriage is a simple matter; but how frequently those engaged in the special practice of diseases of women are consulted by women with blanched pale faces, who have made a bad recovery from the last miscarriage, who, indeed, suffer from disease of the cervix, perhaps of the whole uterus, with broken-down health, the consequences of profuse, prolonged, unchecked flooding, and putrid discharges from the *débris* of the rotting placenta, which ought to have been taken away. A permanently weakened uterus often results, and hence the constant recurrence of the habit of miscarrying at the rate of twice a year for many years, as in an instance which came under my observation lately. The treatment of accidental hæmorrhage is the same up to nearly the sixth month of pregnancy, with only two additional precautions—that the membranes should be ruptured before the use of the tampon, if the latter is at all necessary, which rarely happens, and to keep the uterus contracted upon the fœtus. The following case is a suitable example of this form.

Mrs. A—, who considered herself six months pregnant with her fourth child, was taken in labour with hæmorrhage after over-exertion in attending to the business of a grocer's shop, in February, 1869.

She was seen by a medical man about 9 p.m., who did not think the hæmorrhage serious, and he prescribed a draught and left her. At 4 a.m. an urgent message came for the doctor's immediate attendance, as it was thought the woman was dying. He was engaged, and I was asked to visit her. She was blanched, fainting, and tossing about, and the bed was saturated with blood.

The bag of membranes presented. I ruptured them, gave brandy and ergot, and with the hand compressed the uterus and kept it contracted upon the foetus. After an hour she rallied sufficiently by the help of Gillon's extract, &c., to warrant my completing delivery, which was done without any difficulty, and she made a good recovery. Here after the membranes were ruptured the bleeding ceased. Should it not have done so, the question lay between plugging so as to control the hæmorrhage in one direction, and compression of the uterus in the other to ensure contraction, or immediate delivery, and so running the risk of killing the patient in her prostrate condition by shock in the attempt to save her from bleeding from death. When the uterus is small and well contracted and the prostration great, and the os uteri not dilated nor easily dilatable, and the hæmorrhage goes on, I should plug; but when the organ is large, and the os well opened, and contraction difficult to obtain and retain, and hæmorrhage still continues after rupturing the membranes, and delivery can be easily accomplished, it will be well to do so.

But we may have repeated attacks of accidental hæmorrhage during pregnancy without being forced to hasten or complete delivery from severity of dangerous symptoms. In November, 1870, I showed to the society a placenta from a patient who was delivered at full term after three distinct attacks of accidental hæmorrhage. The case altogether was an interesting one, and I shall shortly relate it.

Mrs. D— became pregnant for the third time in February, 1870. Her previous children were healthy at birth, but one died in convulsions from teething with symptoms of head complication, such as increased vascular distension, squinting, and open fontanelles, and during the last pregnancy she was seized with hæmoptysis and tuberculosis of the left apex. A brother died of acute phthisis pulmonalis after repeated profuse epistaxis. About the third month she had a serious uterine hæmorrhage, but under treatment it subsided and the pregnancy went on. On two subsequent occasions, the last about six weeks before her confinement, she had severe hæmorrhage, which brought on fainting and great

prostration, but which yielded to treatment on both occasions and she rallied in strength. On November, 1870, I found her complaining of intense pain over the left temple, eyebrow, and forehead. The face was swollen, the conjunctiva injected, and pain prevented sleep. On requesting her mother to bring me "pen and ink" she said "pen and ale." Her mother observed she had been misplacing and misapplying her words for the past three or four days, and the patient herself was conscious of it, but could not control her powers of speech, and only recognised the error after it was made. She passed abundance of pale urine of sp. gr. 1007, not albuminous. She was ordered a scruple of the compound jalap powder. On the following day after free purgation the power over speech returned, but two days after the pains in the head returned violently, and the aphasia reappeared in a minor degree. Chloral hydrate was successful in alleviating pain. On November 21st she was delivered without hæmorrhage of a putrid child about full term, and on December 5th, or fourteen days afterwards, she died from pyæmia.

No post-mortem was allowed. The placenta from that case was a remarkable example of the source of the hæmorrhage in such cases, as manifested by three distinct clots of different ages lying in the direction from centre to circumference. In such cases as this, where repeated hæmorrhage and cessation takes place, it is often difficult to decide whether the hæmorrhage comes from the placenta itself, or, as Burns thought, from the utero-decidual vessels. This has been doubted, but in such a case as that which I described in my paper in the 'Edin. Med. Jour.' above referred to, repeated hæmorrhages had taken place, and yet the placenta gave no evidence whatever of the source of the bleeding, and therefore I am inclined to agree with Burns as to its origin in such cases.

Now I shall proceed to the next degree of danger connected with accidental hæmorrhage, namely, profuse flow at or near the full term of gestation. I shall not enter into the minute details of causation, as this is more of a practical than a pathological paper, and, keeping this object in view, I cannot do better than bring under notice a case described in the reports of the Edin. Obstet.

Society by that excellent and experienced practical accoucheur Dr. Burn, of which the following is an abridged report :

A woman came to him one evening saying she would require his services by and by, and she complained of a peculiar sensation which came on during the day, as if baby had fallen down. There was no discharge or urgent symptoms then present, and he promised to see her next day. At 4 a.m. he was called to her by the husband, who said she was apparently in a dying state. He found her very weak, and the bed swimming with blood. After giving stimulants and finding the os uteri pretty well dilated, and no portion of the placenta within reach, he turned and delivered the child speedily, but the patient died in about half an hour.

The following case, almost precisely similar in character to Dr. Burn's, occurred last July in my practice. At 2 a.m. I was called to see Mrs. H—, who was said to be very ill. I found her fainting in bed, lips and face blanched, a chamber-vessel three parts full of blood coagulum, blood in a washhand-basin, the bed saturated, and the flow still going on from the vulva. She was at the full term of the ninth pregnancy, and to show the hæmorrhagic tendency I mention that on five different occasions, under the care of able accoucheurs, she had post-partum hæmorrhage of such a dangerous character as to put her life in jeopardy, and on three subsequent deliveries under my care, by the use of ergot before delivery and the proper management of the placenta afterwards, no hæmorrhage whatever occurred. She had never been attacked with accidental hæmorrhage during any of her pregnancies until now. The os uteri was the size of a florin and dilatable, and the membranes intact. I ruptured them at once, gave brandy and ergot in large doses, compressed the uterus, and sent for Aveling's transfusion apparatus. She rallied for a time and the bleeding seemed to cease (externally it did), but it returned and fainting again came on in a modified form. Matters now had become desperate, and it became necessary as a last resource to empty the uterus. I turned bimanually, brought away the dead child, and contracted the uterus thoroughly, expelling placenta and a large mass of clots, but

still bleeding in a small continuous stream went on, until checked by the perchloride of iron. She died before transfusion could be done, about half an hour after delivery. This I much regretted, as I had her own blood ready to inject into her vein, but the apparatus arrived a few minutes too late. My friends Dr. Baker and Dr. D. H. Bruce saw this case, and agreed with me concerning the treatment I had carried out.

The next belongs to the same class of cases. In November, 1865, I was called five miles into the country to see a poor woman who had been flooding in labour all night. She was tossing about in bed, and blood running over the cottage floor. The cause she stated to be over-exertion in carrying bricks, the basket being sustained by the womb in the last month of gestation. She had lost blood for thirteen hours. I gave stimulants freely, and she rallied somewhat, but the hæmorrhage continued; I therefore ruptured the membranes, and turned without the least effort. The uterus contracted, and placenta and about a quart of clots came away easily under manual pressure, but she only lived about forty minutes, though there was no post-partum hæmorrhage.

In these three cases—faithfully reported, however painful it is to relate unfortunate results of practice—it was evident, both to Dr. Burn and myself, that to have waited would have been to stand by and see the patients die, and yet, in the attempt to save them, they all died about the same time after delivery. In the last case nearly all the patient's blood had drained away during the long period of thirteen hours, so that there cannot be a doubt that if she had been seen early her life would have been saved. In the first case I relate, so sudden and profuse had been the first discharge that the patient never rallied, and rupturing the membranes and waiting was of no avail. Indeed, the only thing possibly of service would have been transfusion immediately after emptying the uterus. The position of the accoucheur in such cases is a most difficult one, and we cannot sufficiently know and ponder over all the varieties of situation we may be placed in, and have our minds made up as to what we should do and what we should not do in the various conditions in which we may suddenly find ourselves, when

there is hardly time to permit us sending for counsel or more experienced help. After prolonged consideration of these cases it seems to me that the correct practice is, first, to rupture the membranes; second, to compress the uterus; and third, to give stimulants and ergot, and wait and watch whether the hæmorrhage stops or not. If it does the patient gets time to rally, and the labour may be left to nature, or terminated by art, as the circumstances of each individual case may demand. But the hope of the hæmorrhage ceasing is in most instances a forlorn one, and the dreadful alternative arises of delivery or non-delivery, and with this fact before one's eyes, that under such conditions patients die undelivered as much bled to death as if they died after judicious artificial delivery. In the latter instance we are apt to say, Had we waited a little longer would it not have been otherwise? and in the former, Had we delivered our patient would not the bleeding have ceased, and her life have been saved? I think to deliver is the correct practice.

In the above cases we had external evidence of hæmorrhage before the completion of the first stage of labour, but it may also come on at any stage of labour; and this is a most important division of the subject, because it is necessary to be able to differentiate between the diagnosis of accidental hæmorrhage, rupture of the uterus, and laceration of the umbilical cord. The latter will only affect the child, and I have only seen it once happen, and then I detected it by the succeeding waves of blood of an arterial character. Powerful labour and a short cord explained the accident, but immediate delivery saved the child. So rare is rupture of the funis that the mere mention of it will suffice. Fortunately the diagnostic symptoms between accidental hæmorrhage and rupture of the uterus are pretty well marked, and the same treatment is applicable to both, namely, speedy delivery and subsequent contraction of the uterus. In the former the labour pains are generally ineffective and of short duration; in the latter, powerful and of long duration until the moment of rupture, when they suddenly cease, and the head retracts, while in the former it never does. The subsequent collapse is common to both, but in the one it occurs suddenly and immediately after the hæmorrhage, while in the other it generally—but not always, for the hæmorrhage may

be hidden—comes on after considerable external loss of blood. The following case shows the good effects of rupturing the membranes in these cases as a means of checking hæmorrhage.

On February 17th, 1866, I was called to Mrs. H— in her seventh labour. For six weeks she had been suffering from false pains, which she attributed to a fright. The os was dilated to the size of a crown piece and dilatable, but the membranes were entire and not protruding. Pains left her, and on February 27th she thought the waters broke, but she had no pain other than what she had been experiencing for the past seven weeks. On examination I found her flooding and the membranes entire, the os uteri as before, and no portion of placenta within reach of the finger. I ruptured the membranes, and the head, which had already engaged the brim, was soon forced down by a powerful pain, and the first stage of labour was immediately completed, and all hæmorrhage ceased. An hour and a half after, the labour terminated naturally, without any symptoms of further loss of blood. The umbilical cord was coiled twice round the neck of the child, which was well grown, but dead. A succession of gushes of blood followed in alarming quantity, so I immediately emptied the uterus bimanually. A large fibrous clot, of a dark colour, was firmly attached to the placenta, and several pieces nearly as large followed. She recovered.

This is one of those cases that stand at the end of the first, and, as it were, at the beginning of the second stage of labour, so that whenever the membranes are ruptured the second stage is speedily entered upon by one or more uterine contractions, and, as in this instance, the hæmorrhage frequently ceases. But suppose it had not ceased, what would have been the indication? Clearly to put on forceps at once, and by delivering secure what is in truth nature's hæmostatic, namely, contraction of the uterus. But forceps may not always be at hand. The late Sir James Simpson, I recollect, in his lectures, always advised his pupils never to carry forceps with them, as they might be tempted to use them unnecessarily; but now I doubt whether this teaching is correct. What, then, are we to do? First compress the uterus with the hands,

and by abdominal compression hasten or complete the labour, at the same time administering a full dose of ergot; or hasten delivery by another method, as in the following case. Mrs. M— wanted my attendance, and I went at once. Her previous labours had been quick and favorable. On entering the lying-in room I felt alarmed at the blanched appearance of the patient, and her mamma and the nurse were giving brandy for faintness. Pains were not effective, so, after giving ergot and brandy, by abdominal compression and a finger in the rectum I completed the labour rapidly. The bed was saturated with blood; the child was dead, as it nearly always is in these cases, and a large recent coagulum accompanied the placenta. She was much reduced, and has taken nearly three years to recover her former state of health.

Now I would draw your attention to a case related in the 'British Medical Journal,' January 3rd, 1874, which occurred in the practice of very excellent London accoucheurs, and I make the quotation because it illustrates a method of treatment sometimes followed, but which I cannot agree with.

"The wife of a naval surgeon, of strong, wiry constitution, who had passed through several pregnancies without accident, when within a fortnight of the natural term was seized with severe accidental hæmorrhage whilst going up stairs, and without any previous pain. No trace of the placenta could be felt within the circle of the orifice as far as the finger could reach. I at once passed an elastic bag, and distended it with air so as to completely fill the vagina.\* The face at this time was pale, the pulse of fair strength, the voice good, and there were no indications of collapse. After about three hours, during which there was no bleeding(?), † I again examined the patient, and found the orifice slightly larger." Her husband being at this time accidentally absent, the author sent for another accoucheur, who arrived in due time, and "after a short delay applied the forceps and delivered her of a dead child. There was no pain either before or directly after delivery. 'The consultant' at once introduced the hand into the uterus in

\* This, of course, would act as a plug.

† Externally, the author must mean.



the absence of a pain, and immediately extracted the placenta, with a considerable amount of coagulum. The uterus contracted firmly. No pain was induced by the extraction of the placenta. nor was there any hæmorrhage; but taking into account the exhausted state of the patient, and the probability that a further small amount of hæmorrhage might prove fatal, it was decided that the uterine cavity should be injected with a solution of the perchloride of iron. Some solid perchloride was mixed with water, and no sooner was the iron injected than the patient began to complain of severe pain in the hypogastrium. It was agreed to administer opium as required. This was done in three doses of nepenthe of twenty minims each, or one fluid drachm in all, but without in the slightest degree alleviating the pain; in fact, it rather increased in severity, and she died exhausted in about seven hours. I saw her about ten minutes before her death, when the pulse was very weak; but the patient was quite conscious, and able to speak about her husband and other matters. No post-mortem examination was made."

In reviewing this, but in a controversial spirit, another metropolitan accoucheur remarks, "I know not what feeling this case may produce with practical accoucheurs generally, but with me it causes a feeling of painful astonishment. To introduce the forceps in a case of accidental hæmorrhage, when bleeding has ceased and no pain was present to indicate any tendency to contraction, and to extract the child, appears unaccountable. To immediately introduce the hand in the absence of a pain and remove the placenta, without taking any previous means to ensure contraction, is only marvellous it was not followed by serious hæmorrhage.

. . . . . And again to introduce the hand in the absence of any hæmorrhage and in the absence of any pain, and to throw into the uterine cavity a solution of perchloride of iron, probably of considerable strength, was so extraordinary a proceeding that I hesitate to characterise it by words," &c. It is easy to judge after the act, although I feel certain that none of these accoucheurs will object to fair criticism, and especially if we put it in this form, in which we are chiefly concerned, namely, Suppose any of us had been called to such a case—and we never

can tell when we may be placed precisely in the same position—*what would we have done?* For my own part, guided by principles I have already pointed to in this paper, I clearly see what would be the course to pursue. In the first place the os was dilated and the bleeding comparatively slight, and there was no shock to the system. Rest and opium in full doses to calm the circulation might have proved sufficient until the os became more dilated or dilatable, taking care to wait and watch; but should these means have failed and external bleeding continued, or if the constitutional symptoms of hidden or internal hæmorrhage into the uterus manifested themselves, the next step would have been to rupture the membranes and secure contraction of the uterus by full doses of ergot and manual compression. After rupturing the membranes, if no hæmorrhage continued, then it would be proper to wait until the os became dilatable, and, if nature was not sufficient, to carefully help the delivery. Bimanual extraction of the placenta and contraction of the uterus would be all probably afterwards required, but to introduce the hand *in utero* in such cases, where there is not likely to be adherent, but rather separated placenta, is bad practice, as it intensifies the already existing shock, and under the conditions mentioned to have injected the perchloride of iron was assuredly to bring it into disrepute. To plug, even by an elastic bag, as was done, is certainly most dangerous practice, and can only convert external bleeding into concealed or internal hæmorrhage, perhaps the most fatal form of this class of accident to the pregnant woman, which I shall now proceed to show by a careful review of cases, as I consider it the most difficult and most important of the divisions of accidental hæmorrhage.

The following case of hidden or internal accidental hæmorrhage occurred in the practice of Dr. Wigglesworth, of this town, who kindly placed its history at my disposal. He states, "I was accidentally called to the patient about 1 p.m. I found her in a state of collapse, shrunken face, rapid pulse, cold extremities, and suffering great pain in the left side; seven months advanced in pregnancy. History was that she had been greatly exerting herself in moving, but on the morning of that day

had done nothing particular. There were no symptoms that could possibly refer to any other organ but the uterus. An examination internally failed to throw any light upon the matter. A second visit in about an hour and a half found no change, with the exception of a great increase of pain, and all movements of the child had ceased. With considerable difficulty I pushed my finger through the os and ruptured the membranes. I tried manually to dilate the os, but only slightly succeeded. In about two hours or more I tried again, but only succeeded as far as to admit two fingers, and found a natural presentation. The patient ultimately died in about five hours from the commencement. A post-mortem showed the uterine cavity perfectly free from blood, but upon looking at the placenta and endeavouring to remove it I found, after I had separated about three quarters of an inch of the border, that it was completely detached from the uterus with the exception of a ring of adherent placenta all round. There was a firm clot occupying the detached space, but not more than would weigh about one pound."

This case of placental apoplexy, or hidden accidental hæmorrhage, is similar to nearly all cases of abortion in the early months in this respect—that placental separation and bleeding takes place from the centre to the circumference. What at once takes the attention is this, how could such a comparatively small bleeding account for death? We can hardly give shock the whole blame, for it generally kills suddenly. It is, perhaps, rather to be explained in one of two ways—that a pound weight of compressed blood-clot at the end of say twenty-four hours would represent a very considerable quantity of blood; or that the patient was a weakly woman, to whom the loss of a pint of blood was fatal.

Dr. Desmond, one of our most experienced accoucheurs, relates a case almost precisely similar\* of a lady in delicate health who died in the same way, and in whom the os uteri could likewise not be dilated and delivery hastened. Transfusion failed. The next

\* *Vide* 'Liverpool Med.-Chir. Journal,' vol. i, p. 81. Dr. Desmond gives a *résumé* of fatal cases in the practice of Johnson and Hardy, of Dublin, Lee, Oldham, Churchill, &c., and states his opinion that these cases are all but hopeless from the beginning. They are fortunately of rare occurrence, and, to use the words of Dr. Blundell, "scarcely admit of a remedy."

case is a very typical one. I quote from an excellent paper on the subject in the 'Edin. Obstet. Transac.,' vol. i, p. 51, by Dr. Cappie, of Edinburgh. He relates two cases, both followed by recovery, but time only permits me to bring one before you. "Mrs. C— was a healthy woman, whose previous labours and recoveries had been good. Six weeks before her expected time, in the forenoon she felt her back weak and had some abdominal pain, which she supposed was caused by flatulence. About midday, as she was standing attending to some household duties, she suddenly became giddy, and clutched a chair to support herself. Cold perspiration and fainting followed. She was put to bed, and on attempting to rise she was seized with a shaking, aguish feeling, and again she fainted. On becoming conscious she felt the abdomen had become greatly more distended than it had been. She felt very uncomfortable from tension and pain in the uterus, began to toss about, could rest neither in bed nor out of it, and she vomited repeatedly. When I saw her her countenance had that painful expression of anxiety and prostration which makes me at once suspect some serious mischief. The crampish spasmodic pain was constant and distressing, and a fidgety, sick, restless feeling prevented her from keeping in one position beyond a few seconds. On examination I found the os uteri completely closed; there was no evidence of labour having commenced. On placing the hand over the abdomen its enlargement and the hard scirrroid feeling of the uterus were very striking, but there did not appear to be any regular contractions of the uterus. I waited some time and ascertained there was no increase in the swelling. One hour and a half afterwards, as the restlessness continued and some interference appeared absolutely necessary, I made efforts to dilate the os uteri." He succeeded in doing this and ruptured the membranes; expulsive pains followed, and about an hour and a half after forcing the fingers within the os he was able to terminate the labour. The child was dead, and the placenta came away with about a chamber-pot full of clots. She made a slow but good recovery, being able in three weeks to sit up in bed. The placenta was healthy, but had a tear in its centre, and no clots were found in its substance.

This is a case well told, boldly and successfully treated, and the second in succession, the first being more hopeless than it, but which I passed over because I consider this the more typical case, occurring in a healthy woman. It needs no remarks, for every stage in the history of its development and treatment is so well and graphically described that I would recommend every medical man practising midwifery to study it well.

And now I shall relate the leading facts of the case of twin pregnancy previously referred to, complicated with accidental hæmorrhage. It is headed in my case book "Accidental hæmorrhage; separation of half of placenta and death of first twin; profuse hæmorrhage, post-partum with reference to first child, but ante-partum to second child; artificial delivery of second child, living; oozing from cervix; tendency to death obviated—1st, alum sponge; 2nd, injection of perchloride of iron; 3rd, transfusion. Recovery."

Mrs. C— was taken in labour with her eighth confinement at full term, June 4th, 1871, at 6 a.m. At 11.30 a.m. I was sent for, and on entering the room was at once struck with her unusual pallor. She complained of constant intense pain over the lower segments of the uterus, and she had vomited three mouthfuls of blood. The os uteri was dilated to the size of half a crown, somewhat firm and rigid; lips thick, but dilatable on pressure, and the membranes were very tense from distension. The abdomen was large and irregular, fœtal heart distinctly audible, but covered by placental bruit over the umbilical region, and not towards either groin. As she was evidently suffering from over-amniotic distension and fruitless pains, and as her expression of countenance hinted at the possibility of hidden hæmorrhage, an idea which was somewhat confirmed by a pretty rapid weak pulse, I ruptured the membranes and discovered a breech presenting. A large gush of sanguineous amniotic fluid came away. I waited and watched, and in an hour and a half the dilatation was sufficient to permit the breech to be forced down into the pelvic cavity, but then a profuse hæmorrhage began to succeed each pain. I therefore hooked a finger round the thigh and brought down the child,

livid and dead. It was, therefore, evident there was another living child, and examination confirmed this. I gave ergot and waited for a pain, and with it came a profuse gush of blood, which led me to rupture the second bag of membranes at once. A shoulder presented, which I tilted up in the attempt at bimanual turning, but the head came into contact with my fingers, and finding it to be small, while I knew the pelvis was of the major kind, large and roomy, I grasped it with my hand, and by the help of abdominal compression delivered her without any difficulty speedily of a living child. The placenta came away by the continued compression of the uterus, accompanied by a large mass of recent and old clots, one of the latter being as large as a foetal head, solid in consistence and black. The uterus remained contracted and the obstetric binder was carefully applied, for if of any use at all it must be after excessive abdominal distension, and she seemed to do well, but in half an hour she became restless, and although the uterus was contracted, a small trickling stream of blood was flowing constantly from the vagina. A teaspoonful of laudanum in a wineglassful of brandy was given immediately, cold applied externally and to the cervix, and then an alum sponge was placed in contact with the everted, irregular, and perhaps minutely lacerated cervix uteri, although no tear could be felt, while I kept the uterus pressed down upon it with the other hand. Still she became more restless, pale and cold, and asked why the kettle was singing. I gave another dose of laudanum, and brandy was continued at intervals. With a Higginson's syringe I kept up a constant cold douche upon the cervix uteri for about five minutes, but again the small blood stream reappeared. Then I injected the perchloride of iron, one part of the Liq. Ferri Perchlorid. fort. to four parts of water. This alarmed me by the great pain it gave rise to in the vagina and womb, from which it extended to the whole pelvis, back, and abdomen, accompanied with short respiration and a facial expression of intense anxiety. The pain was so intensely alarming that I feared the shock would kill her, so I gave thirty drops of laudanum, and continued the brandy until a bottleful was administered. Still the jactitation, &c., continued, and I began to foresee that transfusion was my only hope, and I

made my arrangements to do so without delay. I asked my colleague at the Lying-in Hospital, Dr. Grimsdale, to see the patient, and sent for Mr. Higginson, who has made transfusion a special study, and a consultation was held between Drs. Higginson, Grimsdale, Hugh Miller (then my assistant), and myself. She was then suffering from great uneasiness, jactitation, coldness, and pallor, the pulse being 134, irregular, very weak, and sometimes imperceptible, but there was now no hæmorrhage. Mr. Higginson proposed to delay operating for one hour, and by the majority it was almost agreed to do so, when, still doubtful of the propriety of waiting, and remembering that for transfusion being successful it ought to be done as early as it is seen there is absolute need for it, I requested them to remain until I had again visited the patient. She was then pulseless, cold, and in great distress, with occasional delirium beginning actively to show itself. I therefore at once assumed all responsibility and requested Mr. Higginson to prepare to transfuse, which was immediately done with our assistance. A maid servant from a neighbouring house supplied the blood, and about six or seven ounces were thrown in before the apparatus, Mr. Higginson's own, became clogged. She became calm immediately after, the pulse fell to 110, and quiet sleep succeeded. Dr. Miller remained two hours with her. The operation was done five hours after delivery. At 10 p.m. the pulse was 108, she took beef tea, felt inclined to sleep, and had no delirium. The following day she told me she remembered nothing of yesterday from about one hour after the confinement. She made a good recovery.

In this case the bulk of the blood was lost before the membranes were ruptured, and it will be seen that a uterus doubly distended, and with an excessive quantity of amniotic fluid, was no protection against hidden hæmorrhage. Now, let us suppose that after rupturing the membranes profuse hæmorrhage had followed externally, can it possibly be imagined that plugging, and so converting external into an internal or hidden or latent hæmorrhage, would be one iota of service? For my part I cannot conceive any more dreadful error, and yet I have seen it frequently done, and there are many accoucheurs who, in blind or thoughtless ignorance, still follow

this practice, which cannot be sufficiently reprobated and denounced. The placenta was common to both children and was very large, but that portion to which the funis of the dead child was attached presented the appearance of having been separated for some time, and presented a marked contrast to the other portion, which had only been recently separated from the uterus.

But accidental hæmorrhage may be hidden in the second stage of labour as well as in the first, or before labour comes on at all, and then we have not the uterine physical signs to aid us in our diagnosis. The following is a good example of that complication, requiring keen perception and acute diagnostic power to detect it at once and apply the proper treatment. I attended the case with Dr. Bellis, of Woolton, the fact that both she and her husband had been forewarned of the possibility of serious complications in labour being the reason I was engaged to be present as consultant. Her history was as follows. She was the mother of six children, all of whom at birth were large in size, and, as a consequence, in some unfortunate manner the perinæum had been so ruptured that Baker Brown was consulted, and he restored it successfully. She became pregnant twice afterwards, but miscarried. Being pregnant again at Clifton, she had flooding, and was confined to bed for two months. On her return journey to Woolton she was again seized with hæmorrhage, and had to break her journey at Worcester, where she remained under treatment for three months. After quickening she returned home, and, by advice, kept the recumbent posture for the remainder of the period of gestation. She was rather despondent, and had to be kept up with extra diet and a sufficient allowance of stimulants. I saw her about the seventh month of pregnancy, and not again until she was taken in labour, on September 1st, 1873. I then discovered that she had had a return of the hæmorrhage ten days before, but in small quantity. Dr. Bellis told me she had made fair progress since his arrival three hours ago. The presentation was in the first position, and the os uteri dilated to the size of a half-crown and dilatable, the membranes ruptured, and uterine contractions occurring every ten minutes, but rather weak and inefficient in character. The pulse was good and the foetal heart distinct and normal. After waiting



an hour and a half the pulse began to become weak somewhat, and she looked pale and exhausted, although quiet and free from all excitement, &c., and she did not appear anxious after being reassured of the normal state of the labour; and in this we were much aided by the judicious use of chloroform, so as just to keep her hovering on the borderland of consciousness and unconsciousness, according to the recurrence or absence of pain. At the end of that time, no advance taking place and symptoms of depression having just become to be more pronounced, I asked Dr. Bellis to give a full dose of ergot and put her well under chloroform, and I applied short forceps and delivered her of a pretty large living male child. But immediately on the head reaching the outlet a gush of blood rushed over it. Dr. Bellis skilfully compressed the uterus, and I speedily completed the delivery, which was followed by a gush of clots and blood and liquor amnii to the quantity of a chamber-pot full, the clots alone measuring a quart. We repeated the ergot, compressed the uterus and kept it contracted, and allowed the placenta, which was partly in the vagina, to remain for fully half an hour. She came well out of the chloroform immediately after the passage of the head, but looked blanched; pulse weak, rapid, and jerking, with sighing and slight jactitation, but a dose or two of brandy relieved these symptoms. The uterus threatened again and again to relax, and had to be kept contracted by occasional manual irritation through the abdominal wall. It was two hours before I considered it prudent to leave her, and Dr. Bellis remained another hour. She recovered rapidly.

On examining the clots they were found to be of different ages, marking the periods of the occurrence of each hæmorrhagic attack, but the great mass was recent, and a part gave evidence of the bleeding which occurred ten days previously. The very old clots were like wash-leather. The uterus was nodulated, and irregular in contour, from small fibroids.

Little requires to be said in the way of commentary on this case, more than this, that it must be very evident that, if forceps and speedy delivery had not been resorted to when symptoms of collapse set in, with the administration of ergot, neither mother nor child could possibly have gone safely through the labour. To

have a living child under the circumstances was a success evidencing speedy diagnosis followed by prompt and decisive action.

In conclusion, let me reproduce the rules of treatment of accidental hæmorrhage laid down and taught by Simpson.

1. Whenever it is very severe, and the danger great, dilate\* the os uteri, and deliver if the state of the parts at all allow it. In very bad cases incision of the os may be required for immediate turning.

2. If the hæmorrhage be more slight, or the os uteri and passages rigid, rupture the membranes.

\* Manual dilatation of the os uteri at or after the seventh month of pregnancy I can vouch, from a very considerable experience, to be an operation not difficult to perform if the accoucheur has a small hand. And, so far as I know, it is perfectly safe for the patient. In cases of puerperal eclampsia I have been able to open up the os when there was no dilatation whatever, by introducing one finger and dilating, then two, three, and so on, until the conoid hand passed in utero, in less than half an hour, and we know that nature does the same in less time. When there is hæmorrhage the os uteri dilates easily and speedily under moderate pressure.

## NOTES ON SYPHILIS.

By S. MESSENGER BRADLEY, F.R.C.S.

*Syphilitic affections of cartilage.*—The extra-vascular character of cartilage renders it less prone to inflammatory affections than the contiguous bone, but when attacked its low vitality renders it obstinate to treatment. This is the case in syphilitic affections, whether they be of a secondary or of a tertiary character, as in other diseases of inflammatory origin. Indeed, restricting the use of the term tertiary, as I do, to cases characterised by the presence, in a circumscribed or a diffused form, of a gummatous exudation, I do not know any syphilitic lesions which so steadily resist treatment as the tertiary affections of cartilage. Example is better than precept, and as during the last year I have met with two typical cases of tertiary syphilis affecting the nasal cartilages, I will illustrate my remarks by relating the salient points of one of them, which the other, in almost every particular, closely resembled.

I first saw M. K— in January, 1874, as an out-patient at the Manchester Royal Infirmary. He was a spare man, forty years old, who ten years before had contracted syphilis, for which he had been treated non-mercurially. The secondary symptoms which ensued were of an ordinary and not very grave nature; but after an interval of apparent cure, which lasted over four years, he began, about the middle of 1873, to notice a gradual and painless enlargement of the cartilaginous part of his nose, which very slowly increased up to the time when I first saw him. On examination I found that the bones of the nose were quite unaffected, but that the cartilages were all much thickened by the exudation into them of a diffused gummatous substance. The nose was dusky red in colour, except at the tip, which was quite black and dry, the

black colour being marked off from the neighbouring red by a distinct line. This man remained under treatment for several months, during which time various remedies were tried, *e.g.*, among others the gums were kept tender for six weeks by mercurial inunction. Iodide of potassium was administered in doses varying from five to twenty grains, and after a time iodide of sodium in rather larger doses. Cod's liver oil, sarsaparilla, &c., were also freely given to keep up the tone of his general health, and a variety of local applications, most of them of a stimulating character, were employed. At the suggestion of my colleagues who saw him at a general consultation he was put upon a course of arsenic for some time, but this, like every other plan, failed to produce any effect upon the disease. It is true the disease did not extend, but nothing caused the slightest improvement in the condition of his nose; indeed, there was no apparent change in the organ between his first and his last visit, even the tip remaining as when I first saw it, black and polished, without any sloughing or separation having taken place, or on the other hand any evidence of increased vitality. It was otherwise in the second case to which I have alluded. In this instance the man, who was a weak strumous subject, with the syphilitic cachexia very strongly marked, suffered eventually from phagædena of the nose and necrosis of the hard palate. The ulceration extended into some of the palatal arteries, and violent and repeated hæmorrhages ensued, which were difficult to arrest, and which reduced the poor fellow to a sad state of anæmia, from which neither iron or nourishment succeeded in rousing him. I lost sight of him at last, owing to the fact that he could no longer crawl up to the Infirmary, and have since learnt that he died from exhaustion, following upon an unusually severe attack of hæmorrhage.

*Case of syphilitic tetanus.*—The following case occurred in the practice of Mr. W. C. Matthews, of Manchester, to whom I am indebted for particulars of the case. Jane C—, married, æt. 35, contracted syphilis from her husband in the spring of 1874, for which she was attended by Dr. John Watson, of this town, who prescribed mercurial pills and black wash. In June she had a

general eruption of syphilitic maculæ, followed by ulceration of the soft palate. On June 26th she was suddenly seized with spasm of the muscles of the trunk, chiefly, however, affecting the dorsal group, and Mr. Matthews, on arriving, found her suffering from distinct tetanic convulsions, the spasms at times producing a slight opisthotonos. He found a ragged and extending ulcer of an unmistakably syphilitic character on each tonsil, and also ascertained that the basal hardness of the initial lesion had not quite disappeared. He prescribed scruple doses of chloral hydrate with a similar quantity of bromide of potassium, which procured her some sleep during the night of the 26th. She awoke, however, from time to time with a recurrence of the spasms, which lasted on an average about a quarter of an hour, and which were as severe as the spasms of ordinary traumatic tetanus. Mr. Matthews cauterized the throat the following day, and ordered the remedies to be continued. The spasms continued during this day and the following night, but with slightly decreasing violence, and with intervals of greater length. He found that *pari passu* with this change the throat improved, and the next day, the 28th, the ulcers had assumed a healthy character. The improvement continued throughout the 29th, both in the condition of the throat and in the lessening amount of tetanus, and after this date there was no recurrence of the convulsions, the case going on steadily to apparent recovery.

It may be argued that the tetanus in this case depended upon the syphilitic poison in the blood, as epilepsy is sometimes caused by syphilis, and not upon the peripheral irritation of the throat ulcers. I do not, however, think this probable, as even in cases of syphilitic epilepsy there is a definite deposit (gummatous) either upon the membranes, or into the nervous pulp itself, of brain or spinal cord, in addition to the virus floating in the blood, and in this instance the poison was no less in quantity after the tetanus than it was before, as no anti-syphilitic treatment was adopted, but the convulsions were observed to decrease with the improvement and to disappear with the cure of the ulcerated throat, which was effected by purely local means. At the same time, while I regard the peripheral mischief as the direct cause of the tetanus,

I do not doubt that the irritability of the nervous system generally, which is so often caused by the presence of the syphilitic virus in the blood, was a predisposing cause, without which it is probable the ulceration alone would not have been sufficient to produce the tetanus.

*Periodicity of syphilis.*—I think that further observation will show that secondary syphilitic affections exhibit a marked tendency to periodicity in their appearance. The conclusion at least to which I have come is that as long as the dyscrasia lasts it tends to accumulate and break out at certain definite and regular intervals, and further that the seasons of the year exercise a marked influence over their eruption, the early spring being the time of all others when they are most likely to occur. Some cases that I have had opportunities of watching for a series of years exhibit this tendency in a marked degree, though anticipatory treatment seems in some instances to have succeeded in warding off an attack. By way of illustration I may mention the case of a gentleman who for the last six years has had an attack of syphilitic palmar psoriasis every spring from which he is entirely, or almost entirely, free for the remainder of the year. On one occasion only, when he was spending the spring at Spa, did he escape a syphilitic visitation at this season of the year. This afforded me a hint which I have acted on with advantage, viz., of urging patients suffering from long-continued constitutional syphilis to take their sea trips or pay their visits to the German watering places in the spring time of the year in preference to the summer or autumn, which is more commonly the custom.

*Congenital syphilis suddenly becoming active in a youth of 17.*—J. W—, æt. 17, presented himself in my out-patient room at the Manchester Infirmary for the cure of a painful fissure of the tongue and a sore throat. He was a pale youth, presenting many of the marks of congenital syphilis in a marked degree; the right upper incisor was inclined towards its fellow, and deeply but singly cleft at its free edge; the nasal bones were flattened; the eyes wide apart, and both corneæ somewhat opaque from old keratitis.

His tongue presented the traces of old fissures, but in the centre there was a linear deep crack which gave the most acute pain, and which had appeared within a week. In reference to this he mentioned a circumstance which I have been led to regard as eminently characteristic of all syphilitic affections, viz., the suddenness of its appearance; he said, referring to these rhagades, that he was all right one minute and the next, without anything to account for it, had a sore crack in his tongue. I have known the same thing occur over and over again in syphilitic affections of the mucous membrane of the throat, and remember one case where perforation occurred in the course of two hours in a palate which was previously apparently quite healthy; but to return to the present case. In addition to the fissured tongue the lad had deep, sharply cut, grey-coated ulcers on both tonsils, which were inflamed and painful. I carefully examined his generative organs, but could not find any trace of old or recent scars, neither was there any adenopathy or lymphatic enlargement in the groin or neck. Indeed, I have no hesitation in regarding the case as one of congenital syphilis in which the poison, wonderfully little modified by the lapse of time, or by the double channel through which it had flowed, had burst into activity during the changes incident to puberty, when the system is prone to develop any hereditary taint which may be lingering in the blood. Suffice it to say that the treatment adopted in no way differed from that employed in similar cases of acquired syphilis—mercurial inunction, with the internal administration of the iodides of iron and potassium, cod's-liver oil, &c., and that it proceeded steadily to recovery.

*Extensive syphilitic (lupoid) ulceration of the lower lip.*—This case illustrates three points in syphilography: 1, the rapidity of the syphilitic ulceration; 2, the rapidity of cure when proper remedies are applied; 3, the instability of the syphilitic cicatrix.

M. O'C—, æt. 30, became an out-patient at the Infirmary in May, 1874, having for two years previously been under treatment at the Homœopathic Dispensary without deriving any benefit. The whole of the lower lip was cut through and eaten away by syphilitic ulceration, except at the angles of the mouth, where the

undercut lip hung over the lower jaw in two angry-looking blood-red flaps. Not only the lip but the greater part of the muscles moving it had disappeared, the depressor labii inferioris, levator menti, and depressor anguli oris had quite gone and left no trace, their place being occupied by a foul ulcer, with sharp and circularly cut margins. Lotio nigra was ordered as a local application; and ten grains of pot. iod. were administered three times a day, with a grain of proto-iodide of the mercury night and morning. In two days the ulcer showed plain evidence of response to the treatment, and was clearly beginning to heal. The cure went on rapidly, and in a fortnight all that was left of the ulcer was a small central hole below the incisor teeth, through which saliva constantly trickled. The resulting cicatrix was firmly adherent to the lower jaw, and although the two separated edges of the lips were brought by the contracting cicatrix very near together they never came into actual contact. She remained in this condition for about two months, that is, with the ulcer almost healed, but still with a little round hole the size of a small pea which would not close. While I was meditating the propriety of some plastic operation she one day came, about three months after her first appearance, complaining of violent pain in the cicatrix, which she said she was sure was about to break down; of this, however, I could find no evidence, so told her to continue the treatment and come the day but one following. She came as requested, and then demonstrated the value of her subjective symptoms, for the ulcer had again broken out into activity and was rapidly assuming its original proportions. The pain was so intense as to necessitate large doses of opium, and everything was done to stay the plague, but for a time in vain; indeed, it was not until she was again brought slightly under the influence of mercury that the sore showed any signs of being arrested in its destructive march. The only local application that appeared to be of service, and certainly the only one which suited the feelings of the patient, was a mixture of iodoform and glycerine (iodoform ʒj to glycerine ʒiv). I may incidentally mention that I have extensively used iodoform in cases of syphilitic ulceration, and I find it generally grateful to the patient, though I do not consider that it possesses, as a rule, any marked superiority over



many other applications, such as alum, chloralum, &c., and that as an all-rounder it is decidedly inferior to solutions of nitrate of silver.\*

*Syphilitic fissures of the tongue, ending in carcinoma.*—I relate the following case in the belief that it tends to establish the possible evolution of carcinoma from syphilis.

I first saw R. J— in January, 1873, when he was suffering from syphilitic sore throat and syphilitic rhagades of the tongue. He was a weakly man, of dissipated habits, and his mother had died of mammary cancer. He did not attend the hospital very regularly, but I saw him sufficiently often to trace the effect of treatment, which was satisfactory. The throat and the fissures healed, and some posterior cervical adenopathy, which had in the mean time appeared, passed away. He left off coming for some time, but turned up again in June with scirrhus of the tongue. On this occasion he informed me that the fissures soon reappeared on leaving off treatment, but that in spite of the pain he smoked freely and also drank a good deal. The fissures became gradually deeper, and the tongue larger and harder, up to the date of his appearance. It was then found that the tongue was of stony hardness, with a large foul ulcer extending from the side deeply into its substance. As, however, there was no evidence of the glands being implicated, it was decided to remove the tongue, which I accordingly did in the manner advocated by my colleague Mr. Whitehead, viz. by passing the loop of wire connected with a galvanic battery over the tongue through a puncture in the floor of the mouth. On removal the tongue was examined, and found to be scirrhus cancer. The stump never healed perfectly, but, under the action of bromine, made some attempts in this direction. He expressed himself as much

\* Nitrate of silver is generally employed in too concentrated a form. The solid stick should scarcely ever be employed. As a rule, solutions containing a scruple of the salt to an ounce of water are capable of effecting all the good of a stronger solution without causing any of the distress which results from the use of a concentrated solution; nor, indeed, is the pain the only inconvenience which accrues from the employment of the solid nitrate. More than once I have seen most distressing enlargement of the lymphatic and salivary glands follow a too free cauterization of an ulcerated sore throat.

relieved by the operation, and up to the last never regretted its having been performed, as the pain of the tongue, which was so intolerable, in a great measure disappeared with that organ. Within six weeks of the operation the submaxillary glands were found enlarged, and the stump was freely fungating and very offensive. Saliva constantly flowed from the mouth, and altogether the poor fellow presented a sorry sight. What little could be done was done to relieve him, but he died six months after the operation, thoroughly worn out with pain and exhaustion.

This case presents an example of syphilitic ulceration running directly on into cancerous ulceration, guided thither by irritation and hereditary predisposition, neither of which alone probably would have been sufficient to determine its production. This, indeed, has longed seemed highly probable to me on *à priori* grounds, but I have not before been able to trace the evolution without a break. A practical point here suggests itself, viz. that, in cases when patients present themselves with a central hard lingual nodule which is considered cancerous, before proceeding to extirpation of the tongue, iodide of potassium should be given, as I have had the good fortune on one occasion to dissipate a gummatous mass by these means which had been condemned as carcinoma some time before.

## REMARKS UPON A CASE OF FIBROID DISEASE OF THE LUNG.

BY ARTHUR RANSOME, M.D., M.A. CANTAB., MANCHESTER.

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A. B—, æt. 68, short, stout, of moderately temperate habits, indulging in a glass of whiskey and water at night. Had a life-history of cough. All his family had been subject to bronchitis or asthma, or to some form of chest affection. Two sisters died of "disease of the lungs," and one son died of phthisis, and another of "congestion of the chest."

As a boy he could never run without coughing, and had always had a cough in the winter since the age of twelve years.

In 1834 he was pronounced consumptive by a Manchester physician, and wintered in Italy, spending several subsequent winters in the south of England.

In 1836 he worked in a fustian factory, and the dust from the work greatly aggravated his cough.

For the last ten years, since a severe attack of influenza, he had coughed more or less constantly, occasionally suffering from very severe attacks of acute bronchitis, and twice from congestion of the lower lobes of the lungs, with rusty sputa.

TABLE I.—*Chest movements observed in the spring of 1870.*  
(in 100ths of an inch.)

	Mid- sternum.		Lower Sternum.		Third Rib.			Fifth Rib.	
					Right.	Left.		Right.	Left.
Forward .	35	.	35	.	30	25	.	25	40
Upward .	57	.	40	.	50	50	.	40	50

In the intervals between these attacks he had constant expectoration of thick yellow sputa, and at no time could he take a full inspiration without coughing. This circumstance made it difficult

to obtain stethometric measurements, but it was evident (see Table I) that the chest possessed a very large power of movement, considering his age and constant chest disorder.

Up to the last six or eight months he had no great difficulty of breathing, and could walk at a slow pace for several hours together. The physical signs were simply those of chronic bronchitis, and there was no dulness on percussion at this period. His kidneys also were healthy, and the heart only afforded slight indications of thickening of the aortic valves. In the summer of 1872, however, he seemed to lose strength, and in October that year he went to Southport, where he was exposed to very changeable, damp weather.

When he returned, early in December, he complained of great lassitude and pains in the back and loins. He was perceptibly thinner and much weaker; his liver slightly enlarged, complexion yellow, stools white. At the same time his cough was much better, and he had not had a severe attack of bronchitis for many months; in his own words, "his chest was better than it had been for many years." In consequence of his general symptoms and wasting, however, his chest was examined carefully, and on the right side, from the apex to three inches below the clavicle, and to the same extent behind, there was extreme boardlike dulness on percussion, bronchial breathing, and bronchophony, and a few scattered moist sounds were audible. There was no perceptible contraction of the ribs, nor displacement of the heart, though the cardiac impulse was much extended over the right side of the chest, and the heart-sounds were loudly conducted all over the consolidated region. The chest movements were as under, as well as could be ascertained for the coughing, which still prevented him from taking a full breath. The urine was healthy. There was no fever and no sweating. He slept well, but his appetite was very bad.

TABLE II.—

	<i>Upper Sternum.</i>	<i>Middle Sternum.</i>	<i>Clavicle.</i>		<i>Third Rib.</i>	
			<i>Right.</i>	<i>Left.</i>	<i>Right.</i>	<i>Left.</i>
Forward .	20	25	15	15	30	35
Upward .	20	20	15	13	45	40

From this time his weakness steadily increased. A number of bright red ecchymoses, like small nævi, were noted on the trunk. At the end of January he began to expectorate dark-coloured, very fluid sputa, like pus from a gangrenous wound—not putrid, but sickly of smell. The percussion was unaltered, but on auscultation there was abundant gurgling rhonchus and a peculiar clicking sound accompanying the heart's beat. His temperature at this time was 97·8, at 8 p.m. About February 5th there was slight œdema of the feet and legs, and he began to suffer from diarrhœa and symptoms of general congestion of the mucous membrane of the stomach and bowels, aphthous ulceration of the mouth, difficulty of swallowing, and burning pain in the stomach on taking food. He gradually sank and died on February 25th, 1873.

The post-mortem examination made fifty-five hours after death was very hurried, and restricted, by the request of the friends, to the lungs.

There was much subcutaneous fat; the ribs were remarkably elastic; and the costal cartilages soft for a man of his age, and healthy, not hypertrophied or ossified.

The heart was normal in situation and size.

The *left lung* collapsed on opening the pleura, and was healthy, with the exception of containing frothy mucus.

The *right lung*, in its upper lobe and half the middle lobe, was consolidated and firmly adherent by the pleura, which was about one sixth of an inch in thickness, hard and gristly, and so tough that a portion of the lung had to be cut out.

The interlobar pleura was also thickened, gristly, and firmly adherent to both lobes, and one or two prolongations of similar texture seemed to extend from the pleura into the lung; several of the bronchial tubes were also surrounded by a deposit of fibrous material.

These were the only indications of a commencing fibrosis of the lung. The lung itself was hardened, and sank in water, but still retained a portion of its vesicular character, but it was almost black in the upper lobe and half-way through the middle lobe, where there was a well-marked line where the colour changed from black to livid red. The tissue gave way under pressure with the

finger, and in the black portions it was honeycombed by a number of small vomices, varying in size from a pea to a hazel nut, and containing thin grey or bloody pus. There were no tubercles.

This case was interesting in both periods of its course; in the first as showing the tolerance by the human body of an extremely severe form of chronic bronchitis, not producing in this case either heart or kidney mischief, and not even terminating in emphysema or bronchiectasis.

The chest movements also were remarkably free for an old man, and showed an elasticity of the thoracic framework, which the post-mortem examination only confirmed.

After the disease had set in, the upward movements of the chest were somewhat diminished, not only over the consolidated lung, but over the whole surface.

The diagnosis of the case in its latter stage was sufficiently difficult, but the disease differed from ordinary phthisis in several particulars:

1. In its entirely unilateral character to the last.
2. In the peculiar boardlike dulness on percussion over the affected lung.
3. In the absence of fever, the temperature being lower than the normal standard.
4. In the absence of anything like colliquative sweating.
5. In the diminution of the bronchitic cough after the consolidation had taken place; and
6. In the peculiar character of the sputa.

Its distinction from cancer was much less certain, but there was no history of any hereditary predisposition to that disease. There was no evidence of any other cancerous deposit in the body, and there was no shrinking of the walls of the chest, such as would have been probable in the most common kind of cancer of the lung.

This last feature of the case, and its short duration, also went against the opinion that it was fibroid disease, but, on the other hand, the absence of contraction might perhaps be explained by the early stage of the disorder; and from the history of the case, the long-continued chronic bronchitis, and the absence of definite

signs of either disease, it was deemed most probable that it was an instance of fibroid consolidation terminating in softening.

It is probably not usual on post-mortem examination to find the lung in so early a stage of the disease, so far as the deposit of the fibrous tissue is concerned. The breaking down of the congested upper half of the lung and the diarrhœa would seem to have carried off the case before it had fully developed into a complete form of fibroid disease, but it may perhaps be all the more instructive on that account, and may throw some light upon the difficult question of the pathology of the disease, at least in some of its forms. It is hardly likely that the affection of the lung characterised by the presence of adventitious fibroid material always arises in exactly the same way. The various names that have been given to it by different observers would almost be sufficient to make one hesitate before pronouncing dogmatically on this point. The terms fibroid phthisis, cirrhosis, interstitial chronic inflammation, chronic pneumonia, themselves show the various views that have been entertained on the point.

In the instance before us there were no very large dilatations of the bronchial tubes, and therefore the complaint could not have arisen, as Laennec supposed, from the presence of bronchial cavities; nor was it the result of pleuritic effusion, as it was found at the apex of the lung and the vesicular character was still partially retained.

There were no signs of the thickening of the general fibrous tissue of the lung, such as is found in cases of cirrhosis of the liver, and there was no reason for suspecting the presence of a general fibrinous diathesis, as in the case recorded by Dr. Andrew Clark.

From the early history of the patient it seems most probable that the fibroid deposit was simply the result of violent and continued irritation.

We may perhaps surmise that, at the time of the suspected tubercular consolidation of the lung in 1834, there was already some pleuritic adhesion around the right upper lobe. This might remain for many years without causing inconvenience or any further structural change in the underlying lung; but as the patient became more and more subject to attacks of acute bron-

chitis, with violent cough, and to almost constant bronchial irritation in the intervening periods, the pleuritic affection would gradually become intensified, thickening and contraction would take place, and this morbid action might spread to the connective tissues, not only in parts continuous with the pleura, but to the interlobular tissue.

Dr. Wilson Fox, in his able account of the disease in 'Reynolds' System of Medicine,' doubts "whether there can be any destruction of lung independently of a superadded pneumonia;" but we may easily imagine that the almost constant bronchial congestion, and the compression of the lung tissue by the contracting fibroid growths, would greatly favour the onset of pneumonia, and would soon cause it to terminate in disorganisation and destruction of portions of the lung.

The consolidation of the lung and formation of vomicae were probably the work of the last six months of the patient's life.

With regard to the question of the hereditary transmission of this disease, it may be interesting to note that this patient's daughter died some months afterwards of uterine hæmorrhage; and as she had shown signs two years before of consolidation of the right upper lobe, the lung was examined after death, and the apex was found condensed and covered by an adherent, much thickened pleura, but there was no trace of tubercle to be discovered.



## CASE OF IMPERFORATE RECTUM.

By JOHN GRIMES, M.D., B.Sc. LOND., GRASSENDALE, LIVERPOOL.

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THE special difficulty in the treatment of those cases of atresia of the lower bowel, where a natural anus exists, opening into a pouch formed by the last portion of the rectum, but where a considerable interval occurs between this pouch and the upper portion of the rectum, consists in the uncertainty as to the position of this upper portion and the possibility of repeated failures in the attempt to reach and establish a communication with it.

I believe that, in the absence of any indication of the exact position of the bowel, if the needle of an aspirator be pushed in the direction where it is most likely to be met with, then, in case of failing to reach the bowel at the first attempt, a second and possibly even a third and fourth attempt might be made in slightly different directions, without doing such an amount of damage as would preclude the possibility of the child's surviving in case the bowel were eventually reached. Probably, also, in those cases where, fortunately, the bowel is reached at the first attempt, the infant suffers less from the shock produced by the small and bloodless wound of an aspirator needle, than it would if a knife were used, or a trocar the canula of which would be large enough to allow the free escape of the viscid meconium. These were the chief considerations that led to the use of the aspirator in the case which forms the subject of these notes.

The patient was a male child, born on the 26th of June, 1874, to all appearance perfectly healthy and well formed. The anus presented an entirely natural appearance, so that my attention was not drawn to the defect till I was informed, twenty-four hours after the birth, that there had been no evacuation of the bowels

beyond a slight discharge of mucus. In administering an injection of warm water, I found that the small tube of the enema bottle passed readily into the bowel, but the water was instantly and forcibly expelled by the side of the tube. I introduced my little finger, which passed up for about two inches into the rectum, and then came to a funnel-shaped constriction, which seemed to narrow to a point. On repeating the examination the next morning, the cavity appeared to be considerably diminished in size by the descent of the apex of the constricted portion, so that the upper wall was now pressed close down to the anus. This upper wall gave a sense of fulness and resistance, but no fluctuation nor any indication of being thinner at one place than another.

I procured the assistance of Mr. Mitchell Banks, who recommended that, as there was no point which obviously presented itself for puncture, we should wait. The next day, June 29th, the cavity seemed still smaller, and there was less room to introduce the finger, but there was still no pointing. We then considered that no advantage would be gained by further delay, and decided to make a puncture in the direction where the upper portion of the bowel might be expected to be found according to the normal anatomy of the parts. Mr. Banks did this with an aspirator needle, on the stem of which was placed the canula of a hydrocele trocar, which (fortunately for our purpose) exactly fitted the needle. A vacuum being produced in the receiver, moderate steady pressure was made on the abdomen of the child, and this, together with the cry of the child, caused a barely perceptible bulging of the upper wall of the anal cavity. Into the bulging portion Mr. Banks inserted the needle, and pressing it carefully onward presently had the satisfaction of seeing a viscid black fluid oozing through the glass tube of the aspirator. The canula was then pushed forward over the point of the needle, and left in the bowel when the needle was withdrawn, being secured by a pad fixed with tapes to a strip of strapping round the hips. A piece of gum-elastic catheter of slightly larger diameter than the canula was substituted for it next day, and each day subsequently a size larger was used, up to No. 12, then little tubes of vulcanite of

increasing sizes, and after these a series of bougies, which at first were left in continuously, but after the first fortnight from the operation were only kept in a short time, being inserted at intervals first of twelve, then of twenty-four hours.

In six or seven weeks, by a very gradual increase in the size of the bougies, as large a one was inserted as the sphincter of the bowel would conveniently admit, and for a few weeks more the finger was occasionally introduced to make sure that the opening was not contracting. The cure was then considered complete.

Throughout the treatment the child thrived well, and appeared to suffer very little inconvenience from the frequent manipulations. Enemata of warm water were occasionally required while the opening was yet very small, and were injected with a No. 2 catheter inserted through the tube in the bowel.

It is worthy of notice in this case how the extremity of the bowel, originally somewhat high up in the pelvic cavity, was gradually forced down till close to the anus. At the first examination the anal pouch extended upwards nearly two inches, and there was no definite indication of the position of the bowel above. At the time of the operation the upper wall of the anal pouch was pressed close down to the anus, but there was a depth of about three quarters of an inch of tissue between the pouch and the bowel. As the opening in this tissue widened it became less deep, and in a fortnight the septum was not more than half its original thickness, and eventually it became little more than a membrane lying close above the anus; so that if further interference should be necessary, it will be rendered easy by the ready accessibility of the constriction.

## ON INJURIES TO THE URETHRA.

By REGINALD HARRISON, F.R.C.S.,  
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LACERATION or rupture of the urethra is, under all circumstances, to be regarded as a serious lesion.

In the first place, it may expose the patient to all the dangers incident to the extravasation of urine in a part where such an occurrence is attended with imminent danger to life, and subsequently it is often the source of extreme discomfort in leading to the formation of a stricture which, more than any other, is difficult to control.

With a view of making a few observations on the treatment of these injuries, I purpose narrating the following cases which I have collected :

CASE 1.—A labourer, æt. 20, was admitted into the Northern Hospital under my care in August, 1866. Eighteen hours before admission he had received a kick on the perinæum. Blood issued from the orifice of the urethra, and he shortly afterwards found himself unable to pass water. For this he applied at the hospital. With some difficulty a No. 7 catheter was introduced, a distinct laceration being felt about the bulb. Two pints of bloody urine were removed, and the catheter was then retained in the bladder. No farther difficulty was experienced. The patient made a good recovery. A contraction about the lacerated part ensued, and for several months the patient attended as an out-patient for the purpose of having the urethra dilated by bougies. Eventually he was lost sight of, some contraction then remaining.

CASE 2.—A dock labourer was admitted into the Northern Hospital under my care in 1866, having fallen from a height astride over some scaffolding.

On admission the perinæum was bruised, and blood was passed by the urethra. On introducing a catheter a rupture of the urethra, about the triangular ligament, was made out. The laceration did not appear completely to sever the urethra, for with a little trouble the catheter was introduced into the bladder. In this position it was retained, and up to the fifth day the patient appeared to make satisfactory progress. On this date, however, the patient became feverish; the perinæum was found swollen, and there was much pain about the part. Under these circumstances I opened the perinæum freely, dividing the urethra forwards from the apex of the prostate. Vent was thus given to disorganized clots, and some fetid pus, and a certain amount of immediate relief was afforded. On the ninth day from the injury there was a rigor, and the patient rapidly succumbed with well-marked symptoms of pyæmia. I was only able to inspect the injured part after death, when I found that the urethra had been almost completely, though irregularly, ruptured in the membranous portion. There were also signs of rapidly extending pelvic cellulitis.

CASE 3.—About the same time as the previous case a sailor was under my care at the Northern Hospital for very similar injuries caused by falling across a rope.

Here the signs of a rupture of the urethra in its deeper part were equally unequivocal. With some difficulty I introduced a grooved staff, and freely laid open the perinæum and urethra to an extent sufficient to secure a free vent for the urine.

The patient made a good recovery, and the perinæal wound completely healed. During the healing process bougies were regularly introduced. I saw the patient not long ago, and he complained of suffering no inconvenience from his accident. The urine was voided in a natural stream.

CASE 4.—A 'bus conductor, æt. 17, was admitted into the infirmary under my care in 1869 with the following history. Seven days before admission he was kicked on the perinæum; this was followed by slight hæmorrhage from the urethra, but he was able to pass his water.

On the day of his admission to the infirmary (the seventh from

the accident) the hæmorrhage recurred, and he had retention of urine. A No. 9 catheter was introduced, and a considerable quantity of urine withdrawn. Two days after this he became feverish, the perinæum was swollen, and there was some pain about the part. To relieve this a free incision was made into the urethra along the central raphe, through which all urine passed. This was followed with relief. He made a good recovery, and left the infirmary with the perinæal wound completely closed. The urethra appeared to be lacerated about the membranous portion along its lower wall. During the process of healing, bougies were introduced in increasing sizes. He left the hospital with a urethra admitting a full-sized bougie, and I never heard afterwards that he suffered from stricture.

CASE 5.—A stonemason was admitted into the infirmary under my care in 1870. He had fallen across a sharp stone, considerably bruising his perinæum.

On his admission he had the usual symptom of lacerated urethra, viz. blood issuing from the orifice of the urethra, and retention of urine. A catheter disclosed a considerable rupture about the deep perinæal fascia. I accordingly laid open the perinæum freely in the middle line, giving exit to clots and forming a passage for the urine to escape.

The patient had rather a sharp attack of orchitis, but with this exception made an excellent recovery. The treatment consisted in the regular introduction of bougies whilst the perinæal wound was healing. When he left the infirmary the perinæal wound was closed, and the urethra of its natural size. I saw him some months afterwards, and he remained quite well without any sign of stricture.

CASE 6.—This patient, a boy, æt. 11, I saw with Dr. Little, of Everton. The patient had been crushed by a carriage, and had evidently sustained some severe injury to the pelvis as well as to the urethra. He had complete retention, and we were unable to get the catheter further than the deep fascia, where the urethra appeared to be completely severed. Under these circumstances we agreed that a free perinæal incision was required, and this I accordingly made. A considerable quantity of urine and extra-

vasated blood escaped. A fracture of the pubic arch was also discovered. For several weeks the patient remained in a very precarious state, as the injury was followed by an acute attack of peritonitis, and for weeks all urine escaped by the wound. As soon as the patient's health permitted it, I attempted to establish the continuity of the urethra; the canal having been completely severed the distal end closed. This was a very troublesome affair, but eventually it was accomplished, and the perinæal wound completely healed. I had the patient under observation for nearly eighteen months, and when I last examined him, though the urethra admitted a full-sized bougie, yet the point of injury was rough and cicatricial, so that I fear there will be some permanent contraction.

In reference to the question of treatment, the cases I have recorded justify a conclusion that in all such injuries external incision, or, as it is more commonly called, perinæal section, is the safest plan of proceeding, recommending itself on the following grounds :

1st. Because of the impossibility of accurately determining the extent and direction of the laceration.

2nd. Because incision is the surest means of preventing extravasation of urine; and

3rd. Because incision diminishes the risk of a stricture forming, or, at all events, moderates the severity of such a formation.

The relative position of a laceration to the deep perinæal fascia is a matter of the first importance. Were it possible in all cases to arrive at the conclusion that the lacerated portion was anterior to the deep fascia, provided a catheter could be introduced into the bladder, it would be safe to treat the injury without incision, resorting to such a proceeding should signs of extravasation of urine appear; for, under these circumstances, the direction taken by extravasated urine is forward towards the scrotum, where it renders itself unmistakably apparent from the moment of its occurrence. Where the laceration is behind the deep fascia, the extravasation, should it follow either immediately or in the course of a few days, is of a much more serious nature, inasmuch as the

urine takes a backward direction towards the pelvis, setting up cellulitis, which speedily goes on to suppuration. Here it is much more subtle; it may be going on from the moment of the injury, not declaring itself until it has occasioned pelvic cellulitis.

The former variety of extravasation is usually amenable to treatment, but the latter, where it has actually occurred, is most frequently followed by a fatal result. Case 2 illustrates this, and Case 3, though the patient was saved, undoubtedly is a similar example. Inasmuch, then, as the precise position of the laceration, whether it is a few lines in front of the deep fascia, or a few lines behind it, determines in a great measure the after-consequence, so far as extravasation of urine is concerned, is it not better to act on the safe side in these cases of deep laceration and anticipate the risk of retrograde extravasation?

The second proposition that incision is the safest means of preventing extravasation naturally follows on admitting the impossibility of precisely determining the position of the injury to the deep fascia. No other plan than that of opening up the injured spot and thus forming a direct course for the urine to escape can be relied upon. In instances where the urethra is completely torn across it is usually impossible to introduce a catheter, and here, under all circumstances, the line of action is evident enough. Where a catheter can be introduced it may be objected that incision is unnecessary, but it must be remembered that the constant presence of such an instrument in the bladder is no safeguard whatever against the occurrence of extravasation, whilst its continual pressure on the swollen and inflamed urethra at the part injured is likely to be followed by sloughing of the canal and a proportionate extension of any subsequent stricture.

In reference to the third conclusion that incision diminishes the risk of stricture, or moderates the extent of such a formation, it may be stated generally that the worst forms of stricture are usually those following laceration of the urethra, and when we consider the circumstances under which such wounds heal where no artificial vent is provided, this is not to be wondered at. The wound in the urethra is more or less lacerated, it heals under the irritating influence of constant contact with urine, and inordinate



plastic exudation is usually thrown out in and around the wound. On the other hand, in cases where the urethra when lacerated is opened by perinæal incision, we have still the original injury; but the circumstances are more favorable for limiting action. Free vent is here given for all that proves of an irritating nature, and the exudation lymph is merely sufficient for coating over the incised tissues. These cases usually heal up as kindly as wounds inflicted on the urethra in the operation of lithotomy, where stricture seldom occurs.

The after-management of these cases consists mainly in great attention to cleanliness, and after the lapse of a few days the regular introduction of bougies until the perinæal wound is completely healed. It is as well to continue the introduction of the bougies at longer intervals of time until all signs of the injury have completely disappeared.

NOTES OF A POST-MORTEM EXAMINATION  
IN THE  
CASE OF A PATIENT IN WHOM LUMBAR COLOTOMY  
HAD BEEN PERFORMED FIVE YEARS PREVIOUSLY.

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THE following notes were made at the autopsy of a patient on whom Mr. Hakes had performed Amussat's operation of lumbar colotomy on March 30th, 1869, for vesico-intestinal fistula. The case was fully reported by Mr. Hakes in the 'Liverpool Hospital Reports' for 1869, and it certainly presents more than usual interest, as it is rare that an opportunity occurs of making a complete post-mortem examination of the abdominal viscera in a case where an artificial anus has existed for so long a period.

The history of the patient subsequent to his leaving the hospital in 1869 may be stated in a few words. For about three years he enjoyed good health, acting as omnibus conductor, suffering very little inconvenience from his artificial anus; but twelve months or more before he died he had, from time to time, suppurations about the rectum and urinary symptoms, and was in the infirmary once or twice previous to his last admission, when he was evidently extremely ill, and was supposed to be suffering from some form of blood-poisoning. He died after having been an in-patient for a few days.

*Autopsy fourteen hours after death.*—Rigor mortis was still present in the lower extremities, but had passed away in the other parts of the body. The body was fairly nourished. There was no œdema of the lower extremities. The abdominal cavity was first opened. There was some local peritonitis over the upper and

lower surfaces of the liver. The whole of the large intestine and a small part of the ileum, together with the skin surrounding the artificial anus in the left lumbar region, were then taken out.

The artificial anus (A), which easily admitted the index finger, was found only to communicate with the transverse colon (B); there was no communication whatever with the remains of the descending colon, which, together with the sigmoid flexure, had become completely obliterated; in fact, that portion of intestinal canal which extended from the artificial anus to the point at which the recto-vesical fistula had existed was found to be replaced by a cylindrical mass of fat (C), having a diameter of about an inch, which was, no doubt, the representative of the descending colon and sigmoid flexure, as it was in direct continuity above with the part of the colon that terminated in the artificial anus, and could be traced below to a cicatrix (D) in the posterior wall of the bladder, which was evidently the point at which a previous fistula had existed. The length of this fatty column was about six or seven inches; in the centre of it was found a fibrous cord of about a line in thickness, which was thought might possibly be the atrophied remains of the intestine. It was carefully hardened in chromic acid, and sections of it were made, both by Mr. Rushton Parker and myself, but with an entirely negative result. No trace of a canal of any kind could be detected in this fibro-areolar cord.

The rectum and bladder were removed and I afterwards dissected them out, and the following appearances presented themselves. About two inches from the natural anus a tight stricture existed (E), which had reduced the calibre of the canal to about the size of a goose-quill. A probe was then passed through the strictured part for the distance of about five or six inches, where the rectum was found to terminate in a *cul-de-sac* (F), which corresponded with the cicatrix of the old recto-vesical fistula. An extensive cicatrix (G) existed at the lower part of the rectum, the calibre of which above this cicatrix was scarcely larger than an ordinary quill. At (H) about four inches from the anus a small *cul-de-sac* existed; this, however, had never communicated with the bladder. The wall of the rectum was not abnormally

thickened except at the strictured portion (E), where some induration of the wall was present.

The bladder was next opened by a vertical incision through the anterior wall; in the posterior wall, about two inches above the entrance of the ureters, was seen a fossa (D) which admitted the tip of the forefinger and the bottom of which consisted of cicatricial tissue. The site of this perfectly closed fossa exactly corresponded with the lower end of the fatty mass representing the sigmoid flexure (K) and the upper end of the rectal *cul-de-sac* (F).

Several hæmorrhoids (M) existed.

There was a considerable amount of new connective tissue between the lower part of the rectum and the bladder. The bladder in the region of the trigone was much congested, and the mucous membrane presented a granular appearance. The urethra was healthy except in the prostatic portion, which was congested, and to the right of the sinus pocularis there was a fistula (N) which communicated with the perinæum.

On the application of iodine the wall of the great intestine showed extensive amyloid degeneration; the small intestine was only affected to a slight extent.

The kidneys had undergone extensive lardaceous change, the weight of the two being 29 oz. In the medullary portion of the left kidney an abscess about the size of a walnut existed, but the nature of this, whether syphilitic, tuberculous, or otherwise, was not very apparent.

The liver was lardaceous, but to a much less extent than the kidneys. No enlargement of the lumbar glands.

Testes healthy. No syphilitic deposit was present in these or in any others of the viscera. There was a small abscess in the right epididymis.

Thorax.—Heart healthy. Slight atheroma of aorta.

Lungs healthy. In the right pleura there were some recent adhesions.

Brain healthy.

*Remarks.*—The cause of death in this case was sufficiently evident from the post-mortem appearances. I think there can be

little doubt that the patient died from uræmia as a result of the extensive degeneration of the kidneys. Whether the amyloid disease of the viscera was due to syphilis, or was a consequence of the long-continued suppuration which had been going on about the perinæum in consequence of the urinary fistula, I do not think can be definitely decided. Most probably both causes aided materially in the production of the lardaceous disease.

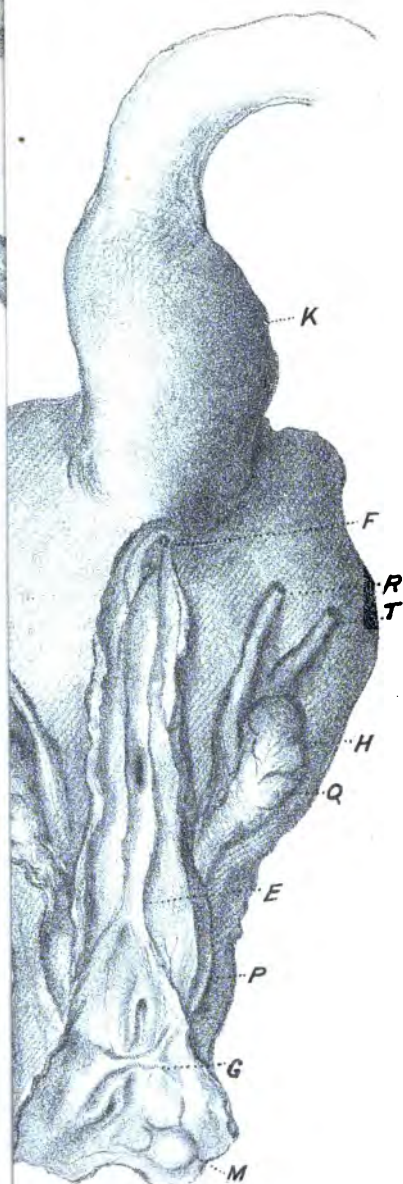
The most interesting point in the whole case is doubtless the total atrophy of that portion of the intestine between the artificial anus and the cicatrix of the recto-vesical fistula. That a considerable amount of atrophy should take place in a portion of the colon which was no longer performing its normal functions is what the simplest laws of physiology would lead us to expect; but that mere disuse should cause complete disappearance of the intestinal tube, nothing remaining in its place but a fibro-areolar cord surrounded by a column of fat, is, I think, somewhat unusual and worthy of being placed on record, more especially as I have failed to find in the literature of the subject any case quite similar to the one under consideration. The records of several cases are to be met with in the works of Curling and other authorities, in which the patient has survived the operation of colotomy for several months, but in none of these was an examination made after death. The only cases on record in which autopsies have been made seem to be those in which death took place very shortly after the colon had been opened. It should be remembered, however, that the obliteration of the intestine observed in this case in no way differs from that which is met with shortly after birth in foetal structures, such as the ductus arteriosus and the hypogastric arteries.

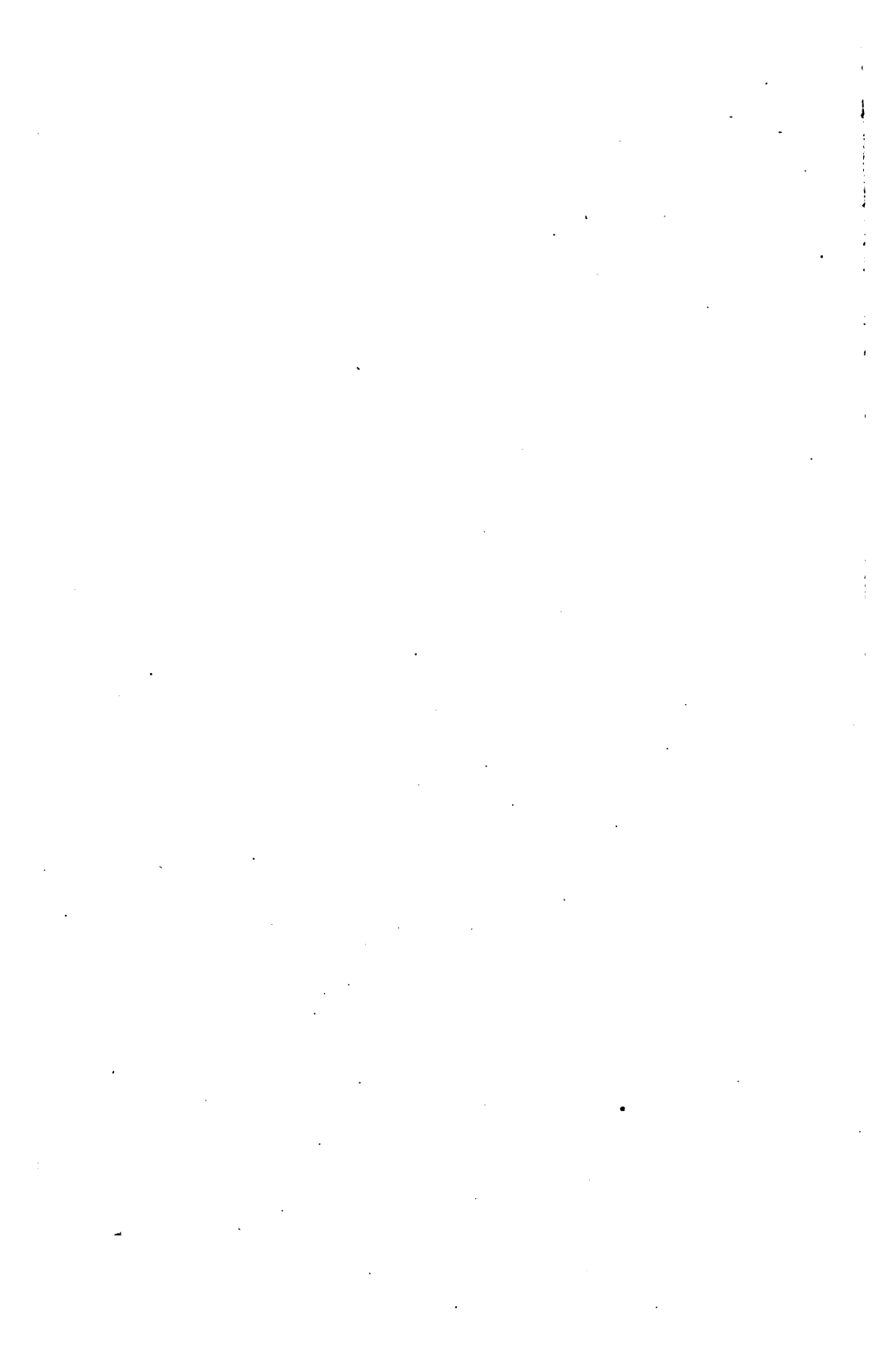
I have appended to this paper a sketch of the dissection described.

### DESCRIPTION OF PLATE.

- A. Artificial anus.
- B. Transverse colon.
- C. Fatty column representing the descending colon.
- D. Cicatrix at the site of the old recto-vesical fistula.
- E. Rectum cut open along posterior surface. The letter points to the narrowest part of the rectum.
- F. Cul-de-sac.
- G. Cicatrix.
- H. Cul-de-sac in anterior wall of rectum.
- K. Fatty column in the position of sigmoid flexure.
- M. Hæmorrhoid.
- N. Perineal fistula.
- P. Prostate divided through the anterior part in front.
- Q. Vesicula seminalis.
- R. Vas deferens.
- T. Ureter.
- V. Ileum and vermiform appendix.

The drawing to the right represents the actual size of the preparation, that to the left is drawn to a scale of about one half.







## CERTAIN DIFFICULTIES IN THE PERFORMANCE OF SYME'S PERINEAL SECTION.

BY EDWARD LUND, F.R.C.S.,

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UNLESS guided by the hand of a Syme, to pass the catheter in the operation of perineal section, or to replace it a few days afterwards, is often a matter of extreme difficulty, and will try the skill and patience of the surgeon, if it do not even jeopardise the ultimate success of the operation. This, however, is but one of many difficulties to be encountered in this operation; and having had to contend with them myself, and at length, I hope, overcome them, I am anxious to explain to other workers in practical surgery the mode of operating which I now adopt. I trust that I shall not be accused of egotism if I do so without comparing, at each stage of the treatment, other means which may have been employed for similar ends.

First, as to the propriety of the operation and the cases to which it may seem to be especially suitable, I may state that I confine it almost entirely to cases of old undilatable stricture of the urethra, in which the tissues about the perineum are the seat of much chronic induration, with perineal, scrotal, or penile fistulæ, and in which, as a necessary attendant upon such conditions, the strictured portion of the urethra has been so narrowed as to constitute the tunnel-form rather than the annular or ring-shaped stricture. This latter, it is well known, is rarely the result of injury, but much more commonly arises from previous inflammation. It is in this form, which is often spoken of as organic to contrast it with the traumatic form of stricture, that we may very

generally do much good by gradual dilatation, and even complete the cure by Holt's immediate method, provided there be no renal complications.

As to the success of the operation I am about to discuss, I know that surgeons have differed greatly in their opinions as to its value, and this, no doubt, has depended on the difficulty or facility with which the operation has been performed and the treatment completed in any given case. Assuming, therefore, that a suitable case has been selected for what is now so well known as Syme's perineal section, the plan I pursue is somewhat after the following system.

First, I investigate, as far as possible, the condition of the urinary organs in reference to the kidneys and the mucous membrane of the bladder. The latter will, of course, in many cases, have assumed a permanently unhealthy condition from long retention of urine within its cavity, by reason of the contracted outlet, which may lead eventually to the production of what some writers have called the surgical kidney; that is, disease slowly advancing from the mucous membrane of the bladder along the ureters, which become dilated, and reaching the pelvis of the kidney. This, under repeated attacks of retention, will be injured by inflammatory change set up in the obstructed ducts of the kidney itself and the delicate system of its secreting portion. When in our preliminary examination of these cases we detect albumen in the urine, it is often difficult to decide whether it is derived from muco-pus from the bladder, or has been secreted by temporary congestion of the kidneys, or whether it be indicative of positive structural change in these organs. I have for a long time taken as my guide in these cases the specific gravity of the urine, where it is possible to estimate it from the daily average, unless the presence of renal casts or oil-globules should give unfavorable indications, and before proceeding to operate I collect the whole secretion of twenty-four hours, and judge from it as to the specific gravity. If, together with the presence of albumen, there be a constantly low specific gravity, say, never reaching above 1.010, the patient not taking more than the average quantity of fluid per day, I should look with great suspicion on such a case, and

feel very indisposed to proceed to operative interference. If, however, the albumen were in the same proportion in another case, but the average weight of the urine passed per diem was from 1·015 to 1·022, I should have no hesitation in dividing the stricture. It seems to me that the dangers we have to fear in diseases of the kidney, viewed in the light of surgical operations, arise not so much as might at first appear from debility consequent upon continued loss of albumen, as from the risk we run that, while the patient is suffering from the shock of a recent operation, the kidneys, influenced like all the other glands in the body, through the sympathetic system, suddenly cease to secrete from the blood those matters which they ought to eliminate in such proportion as must be compatible with life. For, in such cases, even before the operation, as proved by the low specific gravity of the urine, the quantity of matters secreted was at the minimum, and therefore these secreting powers being still further diminished, the kidneys fail to remove a quantity sufficient for the continuance of healthy function. For in such cases is it not the accumulation of urea in the blood more even than the sudden cessation of flow of urine which are the gravest of all symptoms with which we have to contend? And is it not then that we observe slowly yet surely creeping over our patient a confusion of intellect with that passive apathetic state which so quickly terminates in coma and in death? Thus, as I have already said, next to the structural change which necessitates an operation for division of the stricture, the amount of induration around the urethra, the numerous fistulæ, and the continued trouble produced by the abnormal passage of the urine—above all these things, we must consider the condition of the kidneys as determining whether or not the operation of perineal section should be performed. There are, of course, cases where the patient is entitled to the benefit of the doubt, and if the risks of the case be put fairly before him, we may then feel ourselves in some way relieved of responsibility in urging the patient to submit to the operation of perineal section, as far as a question of ultimate result; but still I regard the condition of the kidneys as a thing to be looked to more than the actual state of the

urethra. Now, in order to prepare the urethra for the passage of the director at the time of the operation, which it is essential should be accomplished in this form of perineal section, and when it is impossible, by reason of the smallness of the stricture or the presence of numerous false passages, to pass a fine bougie or catheter into the bladder, I have found it an admirable practice for a week or ten days previous to the operation to desist entirely from any such attempts, and to adopt the plan which, I believe, was advocated by the eminent surgeon who designed the operation I am discussing, viz., no longer to use a small instrument, but to proceed at once to dilate as fully as possible the whole of the urethra in front of the stricture, and there to establish a dilated condition of the passage similar to what we know must exist in the urethra behind the stricture by reason of the pressure of retained urine. I begin with as large a bougie as can be fairly passed along the passage, not being satisfied with less than No. 8 or 10—if possible a larger than this—and pass it each day down to the face of the stricture, holding it there for ten or fifteen minutes. If, after two or three such applications, it passes a greater distance as if the urethra were expanding on the anterior side of the stricture, I would then for the remaining few days use a still larger size. I believe this has a very beneficial effect; it so separates the sides of the passage as to draw the mucous membrane away from the strictured part of the canal and enlarge the little orifice, which must still be present at the end of the *cul-de-sac*, like a hole in the bottom of a cup. When the time arrives for the operation, and everything else has been prepared, it becomes the duty of the surgeon, or his assistant, to introduce the Syme's grooved staff, in which it will be remembered one part is made extremely small, equal in the curved portion to a No. 2 or 3 catheter, the shaft of the director being equal to a No. 8 or 10. As soon as the instrument is brought down to the face of the stricture, with the urethra prepared by extreme dilatation as I have described, it is wonderful to notice how readily, in most cases, a urethra which ten days previously would not permit in any way the passage of a small catheter will now receive the narrow portion of the director,

and we may slip it on through an indurated stricture into that wider portion of the canal which leads to the bladder.

It is hardly needful here to say that previous to commencing this operation it is desirable the patient should be prepared in the way now so generally adopted in all important surgical operations ; that is to say, attention should be paid to the condition of the heart, lungs, liver, and digestive organs ; the bowels should be emptied, especially the rectum, by an enema ; the patient should be placed on a mild diet for a few days previously ; and I think it a good plan to insist that he should remain in bed or in a perfectly recumbent position for at least three days before the operation. With this, and the use of aperients (particularly if of a saline nature), we can diminish any congestion of the veins of the pelvis and the hæmorrhoido-prostatic plexus and the vascularity of the urethra and the parts near the neck of the bladder. As might be expected, it will contribute much to the ultimate success of this operation if the patient be of a quiet, tractable disposition, for it is well known that even the retention of the catheter within the bladder is very irksome to some persons, while with others it excites no complaint whatever.

In this operation, as in all others upon the urethra and perineum, it is desirable that we should select an operating table so placed as to be well opposite a good light, that in the progress of the operation the effect of each incision we make may be clearly seen.

The position in which I place the patient is that used in the operation of lithotomy, and I retain him in it by the same means as in the operation for stone ; that is, I employ the wristlets and anklets of Mr. Prichard, of Bristol (referred to in the 'British Medical Journal,' 22nd December, 1860). These I have used in all my stone operations for many years, and find them in every way quite as effective and much more convenient than the old-fashioned tapes with loops and pins formerly employed. They are put on whilst the patient is being placed under chloroform, and the perineum prepared by being cleansed from all secretions and by the removal of any superfluous hair. It now becomes necessary for

either the surgeon or his assistant to introduce Syme's director ; and here it is of the utmost importance that we should be quite certain that the point of this instrument really passes into the bladder ; for only those who have had experience in this procedure can bear testimony to the extreme difficulty, which sometimes arises, in being quite sure, whether or not, the director has taken the right course.

I believe although we may be satisfied that the point of the director is in the prostatic portion of the urethra, as we can prove by examination through the rectum, yet it may have travelled along some false passage in the prostate itself, which some previous catheterism has unfortunately produced, and having thus pierced the prostatic tissue its point may project up into the cavity of the bladder. The question thus arises, Will such a state of things be a bar to the progress of the operation ? Although I am willing to admit it would be only in exceptional cases that we should overlook such a condition, from cases which I have seen, yet I know it is possible that the operation may be brought to a successful issue even though the beak of the director be in this abnormal position. The usual test, that the point of the instrument lies loose in the bladder, of course is, that, while we can only feel it per rectum through the dense tissue of the prostate, we can rotate it easily on its own axis from side to side, and so prove that the apex is free to move within the bladder. The most important thing to determine is that the point of the instrument, after passing through the membranous portion of the urethra, has not diverged either to one side or the other, or more likely backwards or downwards into the loose tissue between it and the prostate or the rectum. Here, of course, it would be appreciable to the touch of the finger when examined by the bowel, and in such a case on no account should we proceed with the operation. The only exception, therefore, which I have allowed to the rule that the operation is not to be proceeded with unless the point of the catheter moves freely in the bladder, is in those rare cases where, as I have just said, we have reason to think it has entered an old sinus in the prostatic portion and there become in some degree fixed. The instrument is now given into the hands of the assistant, to be held by him in

somewhat the usual position of the staff in lithotomy (only placed so that the groove may point directly towards the operator, not in any way giving it a lateralised direction), and the operator has to satisfy himself that the curve of the director or the thick portion of its stem can be felt deeply in the middle line of the perineum. If there be much induration this will be impossible in many cases; and it is therefore imperative on the operator to proceed in a very cautious manner in his first incisions. My plan has always been, and I first learnt it from the late Mr. Dumville—who for many years enjoyed a well-earned reputation for the special performance of this operation, and no one whom I have seen accomplished it more rapidly or with better results—to make my first incision from above downwards, exactly in the middle line of the perineum; not by plunging the knife into the perineum in front of the rectum, and then cutting forwards as some surgeons have recommended.

In the selection of the knife for this purpose I have found it is far easier to do it with a long narrow-bladed knife than with a broad one. The knife I always use is what is known as a finger knife, with a blade not much more than a quarter of an inch in width, and from two to two and a half inches in length. It is true that the cutting surface of such a blade is not needed for more than one inch from its point, and that its length may seem to be unnecessary, but the advantage of the long narrow blade is that, while it lies by the side of the index finger which guides it in the deeper portions of the incision, it does not conceal the view, whereas, with a shorter and wider one, of the ordinary scalpel form, the blade, as well as a portion of the handle, might be buried in the wound. It is generally needful to make more than one cut in the middle line, beginning about one inch and a quarter in front of the anus and continuing it backwards about an inch. As I proceed I seek, from time to time, for the director in its cylindrical or its grooved portion, and it is very important to take care that neither by habit, as in the operation for lithotomy, nor by mischance, we do not, when the moment arrives for opening the urethra, cut into it on the side, instead of on its front aspect exactly in the middle line. It is want of

care here which I think often leads the operator to slip by the side of the small portion of the director, and thus to miss the true position of the groove. As soon as, guided by the nail of the left index finger, I can make out any portion of the groove, I follow the plan which Mr. Dumville so often referred to, viz., that while up to this time the knife has been used with its back upwards and towards the operator, and is still held in the groove in which we are sure it is fixed, by the inability to move it from side to side, it is now made to turn round upon its point until the edge of the blade points upwards, and then by carrying the handle well backwards (having taken care that the pelvis of the patient hangs well over the edge of the table), the point can be made to travel along the groove of the staff, and cut the urethra just at that part where the shoulder of the cylindrical portion can be felt. It is very often difficult to do this, but the difficulty, I think, depends upon the way in which the knife is held. It is not an easy thing to run the point of a knife such as I select, along the groove of the steel director of which we are now speaking. Whether or not it is because the knife blade is of hard steel and the groove in the director of softer metal, yet so it is, that they are very apt to stick or hang together if we allow the point of the knife to impinge upon the surface of the groove at anything like an obtuse angle. But the more nearly the blade of the knife is placed parallel to the groove in the staff so will it travel along it with increased facility. Mr. Dumville used to boast that in this peculiar method of turning the knife round while the point rested in the groove he had broken the point of many scalpels, but he said that by this means he had rarely failed to retain the knife in the groove when he had once fairly entered it. Having in this way divided that small portion of the urethra which is close to the cylindrical portion of the director, we can generally tell, by the ease with which the director passes on, that we have overcome the obstruction, yet very often it will be needful to turn the knife again with its cutting edge towards the rectum and slowly to drive it along the groove.

Here, again, the great advantage of a narrow-bladed straight knife, having its back and cutting edge parallel to each other,



will be apparent, for with it we can so nicely regulate the amount of tissue which we wish to divide; and holding the knife in the position described above, we can slide it along the groove and push it within the bladder, while from the narrowness of the knife-blade it cannot divide the prostate to any dangerous extent. At this stage of the operation, and as soon as the cylindrical portion of the director can be passed onwards, we can also pass the finger, if not quite into the bladder, at any rate into the dilatable prostatic portion of the urethra, and thus be quite sure that the entire passage is laid open. But there are cases in which we cannot do this, and it is difficult to explain why it should be so, except upon the supposition that the narrow portion of the director is held in the prostate. It now becomes necessary to follow some positive plan by which we may be sure that we can introduce the catheter into the bladder along the divided urethra. My method is this:—I have what I call a hollow probe, a small silver tube about six inches in length, to correspond in size with a No. 4 catheter, made at one extremity slightly bulbous, and at the other conical, so as to fit the mouth of a small india-rubber ball syringe, and provided at the time of its introduction with an ordinary silver wire stilette. I then take this hollow probe with its stilette, pass it by the perineal wound, and guide it either along the groove in the director, or by the side of it, until I believe it to be in the cavity of the bladder. But, to be quite sure of this, I remove the stilette, and if, as is generally the case, an ounce or so of urine has remained in the bladder, a small quantity of it can be forced through the hollow probe by pressure over the pubes, and this will demonstrate the true position of the instrument. If this should fail, I inject by the probe two or three ounces of warm water, and then making pressure on the pubic region, the water will flow back in a continued stream through the tube. Having thus demonstrated to the satisfaction of myself and those who are assisting me that the probe is thus placed, I direct my assistant to remove the grooved director. I then take a silver director of rather a peculiar form, being about equal to one third of a cylinder, the diameter of which would correspond to a No. 15 catheter. This is provided at one end with a small handle about a square inch in

extent, fixed to it at an angle of about  $135^{\circ}$ , and at the other end it is made perfectly smooth, but, unlike most directors, not at all spoon-shaped or lipped, being, as I have said, the section of a true cylinder. This instrument I can slide with the greatest ease by the side of the hollow probe, and pass it into the bladder without any difficulty, if in its passage it be held with its edges forwards and backwards. As soon as it has entered the bladder, and is turned round that its concavity may be directed forwards, it will dilate the wound and cause the expulsion of any remaining quantity of water or urine that may be still in the bladder. This will give another proof that the director also is within the bladder. I then remove the hollow probe, and leave the director in its place, with its concavity forwards; and now begins that stage of the operation which I think those who have many times performed this perineal section will admit is often a very troublesome one, that is, the introduction of the catheter into the bladder, where it is to be retained for forty-eight hours, or a longer period. For reasons which I will presently explain I no longer use for this purpose the ordinary elastic catheter. I employ what I have styled an urethral tube, made of the same material as the gum-elastic catheters, corresponding in size to a No. 10, ten inches in length, slightly conical at one end upon its exterior surface, and having six small holes in the first inch from that extremity. The way, or passage, through this urethral tube is perfectly straight and of equal bore throughout.

I have a wire from an ordinary gum-elastic catheter, No. 10 size, cut to such a length that when it is pushed as far through the urethral tube as the ring at one end will permit, it will project beyond it only a tenth of an inch or even less. I curve this wire in such a form as either to imitate the ordinary catheter curve, that of the prostatic curve, or the curve which is given by Sir Henry Thompson, to his No. 1 silver catheter, and I prepare to use one of these three curves, according to the requirement of the case, either by having three wires ready curved, on which I can place the urethral tube, or I curve each wire for the occasion. Having the urethral tube mounted on the wire which I have selected, the two are then in the usual way

held firmly in the right hand, and passed down the urethra until the finger introduced into the wound tells me that the tube has passed into the divided portion. I now take hold of the silver director, which has been in charge of the assistant, and with that curious harmony which we know exists in the co-ordinated movements of the two hands, there is no difficulty in slipping the end of the urethral tube into the grooved surface of the director and carrying it on into the cavity of the bladder. If any difficulty should arise it is generally caused, according to my experience, by the same fault that occasions a difficulty in the passage of the knife along the groove in the director, that is, the end of the tube strikes the groove in the director too much at a right angle; it does not lie sufficiently parallel to the surface so as to slide along it, but it sticks upon it and will not move. This difficulty may be overcome either by using the urethral tube upon a wire stilette curved to a larger circle, which is the same as being more flat, or by tilting up the handle of the director, which is just outside the wound in the perineum, so as to cause the other end of the director to dip more deeply into the bladder and form a sort of sliding surface upon which the urethral tube can run. As soon as it is evident that the tube is in the bladder, which may be proved, if necessary, by removing the wire and injecting water along the tube, pressing the pubic region and causing the water to flow out in a good stream, I then, and not till then, remove the director from the perineal wound.

Now, as to the best mode of fixing this urethral tube in the bladder. For this purpose I use a little screw catheter-holder such as is employed for holding elastic catheters, and so made that it will compress, by a screw action, a catheter of any size from 12 to 3, and with rings at the sides to which tapes can be attached. I take care to place this so far down the urethral tube that the tube may lie fairly within the cavity of the bladder. Then to keep it in the bladder, I adopt a plan for the general principle of which I am indebted to Professor Lister, who showed me while at Glasgow, many years ago, what he considered the best method for retaining a catheter in the bladder. It is this: to so arrange a system of tapes and narrow bandages around

the pelvis that the catheter shall be tied to them and to the immovable pelvis as the patient lies in bed, rather than to either thigh, or to the penis, which may be constantly disturbed in position. I take a broad bandage measuring, say, five inches in width and two yards in length; from the lower border of this I tear up a narrow strip at each end, about three quarters of an inch in width, to within four inches of the middle of the bandage. Then, to prevent this narrow strip tearing away too far, I cut with a pair of scissors a small hole in the bandage just above it, and pass the narrow strip through this, and once or twice over the edges of the bandage, thus fix it at that spot, so that it cannot slip. The bandage, thus torn, is then placed under the patient's body and tied round the abdomen just above the pelvis, uniting together the broad portions of the bandage. Then the narrow strips which hang down behind from each side of it are, it will be noticed, attached to the broad portion, at spots just eight inches apart, where they will lie on each side of the spine, under the patient. These are brought beneath the buttocks, on each side of the scrotum, and tied in the same way to the bandage through little holes in front just opposite to those behind, or, still better, a little further apart, so that the narrow bandages in front will be at least ten inches interval. All these folds of the bandage are made just comfortably tight so as not to hurt the patient, and the object of having a fixed space between the small bandages in front and behind is to prevent them, as they are so apt to do, running together in the middle line just over the line of the wound, or the position of the anus. Then from the eyelets or rings of the catheter-holder strips of tape are taken and attached to the narrow bandage which runs up on each side to such a length as shall just allow a little play to the urethral tube in the urethra.

Lastly, to obviate the difficulty which most surgeons must have observed, of retaining a flexible catheter in the bladder where it is apt to curl downwards and in this way slip out, I have, as was also suggested to me by Professor Lister, followed his plan of taking a piece of the wire stilette of a No. 10 catheter, cutting it about four or five inches long, and introducing it

into the urethral tube so as to keep that part of it stiff and straight. I convert the wire into a plug to stop the end of the urethral tube, by winding round it near to the ring a narrow piece of adhesive plaster into a conical form. This forms a plug which has to be removed each time the bladder is emptied, and it is not difficult to get a patient of ordinary intelligence to perform this operation for himself. I have lately substituted for this wire a piece of whalebone about nine inches in length, conical at one extremity, and this is to be kept in the tube in the same way as the wire, only, being pliable and elastic, it has this advantage over the wire, that it gives firmness to the whole length of the tube, whereas with the wire the tube beyond it often becomes bent and almost pierced by the point of the wire. All matters being thus arranged the patient may be pronounced in a fair position so far as accomplishment of the operation is concerned, but, as is well known, difficulties may occur long after the patient has left the operating theatre and is safe in bed. On the question of hæmorrhage I have not much to say; thus far I have had no difficulty with it, and I have only known of one case in which it has been excessive after this operation. If needful I should not hesitate to plug the wound around the urethral tube much in the same way as we do the tube in the bladder for lithotomy, but so far I have never had occasion to carry this into effect.

I have seen so much trouble and difficulty from following precisely Professor Syme's instructions to remove the catheter thus placed in the bladder after perineal section at the end of forty-eight hours, then to leave the patient to pass his urine as he can, and only introducing the catheter at intervals of two or three days:—I say, I have seen so much difficulty in this second introduction of the catheter that I have long since departed from the exact instructions of one for whose opinions in surgery I have so much respect, and I now adopt the following plan, by which it will be apparent why I use the peculiar form of urethral tube which I have already described. I leave the tube in the bladder just as I have fixed it for at least three days, or even longer if the flow of urine is free and there is every reason to be certain that the tube is rightly

placed. Then, at the end of this time, perhaps five days from day of operation, for fear the holes at the sides of the tube should become obstructed by clots of blood and mucus or phosphates, I usually proceed to change the tube for a fresh one. This I do in the following manner: I have a long stilette made of whalebone carefully fashioned in its entire length of a size equivalent to a No. 2 catheter, of a cylindrical form, quite smooth, and rounded at each end. It is twenty-two inches in length, and at a spot ten and a half inches from each end I have a mark made on it, either as a little groove carefully filed in it or still better a small white mark produced by fixing in the whalebone a fine plug of ivory. Unscrewing the holder by which the urethral tube is retained in the bladder, and cutting the small tapes which hold it, so that it can be removed entirely, but taking care that the tube is not displaced until all is ready, and standing on the right side of the patient, I hold the urethral tube firmly with the left hand. I then have the whalebone stilette well oiled, and pass it down the urethral tube, which it will be remembered is ten inches in length, till so much of the stilette has entered the tube as to bring it up to the mark, which is ten and a half inches from its end. Unless the urethral tube has become acutely bent in some part, and this can easily be done, I know that one half inch of the whalebone stilette will project beyond the end of the urethral tube, free in the bladder. With the right hand holding the whalebone stilette steadily some few inches beyond the urethral tube, and the right elbow resting firmly on the patient's right thigh, I draw, with my left hand, the urethral tube out of the urethra and slide it along the stilette until it is clearly disengaged; my right hand all the while keeping the end of the whalebone stilette still in the cavity of the bladder. Then, as soon as the other end of the urethral tube has emerged fairly from the urethra I seize the stilette close to the glans penis, and hold it there with the left hand; my assistant draws the old urethral tube away, and in its place puts a fresh tube, which should be softened with warm water to make it perfectly pliable, and well greased. This, in its turn, will slide down the whalebone guide, and the right hand once more taking hold

of the stilette, so as to be sure that it is kept steadily within the bladder.

It is easy to understand how this second tube can be slid down without any risk of its showing itself in the perineal wound or failing to reach the bladder, and on the reappearance of the little ivory mark on the whalebone stilette we know that the urethral tube has got fairly beyond the end which is in the bladder. This is then fixed in the same way by the screw catheter-holder, tapes, &c. I repeat this process as often as I deem it needful to put in a new urethral tube, and, in some cases, I have kept the tubes in for several weeks in succession, changing them every four or five days as might be required, and thus secured a perfect healing of sinuses which had been the cause of all the trouble, and this without any of those risks, in failing to introduce the instrument, which I seek by this method to avoid. In spite of all my care it has on more than one occasion happened to me that about the second or third day after the operation the patient has got the urethral tube out of the bladder. One patient, an old man, deliberately untied the tapes and thought himself very clever in performing this facile operation without instructions.

Even up to so late a period as the tenth day after the operation I have succeeded in replacing the tube in the bladder by exactly the same process as was used in the first instance, and although at this time the wound in the perineum would seem to be very nearly healed, yet the patient being under chloroform, in the lithotomy position and everything else prepared, I found no difficulty in passing through the wound, which seemed to have become merely a sinus, the hollow probe into the bladder, verifying this by a careful examination through the rectum and by the crucial test of injecting water along it, waiting for a moment, pressing over the pubes, and having it returned in a good stream through the tube. This fact being established to the satisfaction of those who assisted me I could slide by the side of the probe the silver director, which has no lip or projecting edge at its end, to prevent it passing readily, and therefore travels along the incision like a blunted scalpel,

reopens the wound, and turning it half round so as to have its concavity upwards, I could pass the urethral tube on the curved wire stilette, so as to bear upon the director and thus slide it into the bladder with the greatest ease, and from that day, in the case just referred to, as well as in other cases, no further difficulties were experienced. Whereas, on the contrary, I have known in cases of Syme's perineal section that the surgeon has been compelled at last to desist from any further attempts to pass the catheter where it has unfortunately slipped out, or had been removed, by reason of having no guide for its reintroduction which can compete in simplicity and certainty with this plan of sliding the tubes along the whalebone probe. After three or four weeks or even earlier, when the sinuses which have preceded the operation have ceased to discharge or are entirely healed, then the urethral tubes can be discontinued, and a catheter passed from time to time in the ordinary way. If the perineal section of Professor Syme be reserved for those cases, and those only, of chronic indurated urethral stricture with sinuses and with an almost impervious passage, the great advantage to be gained by the successful issue of such cases will, I think, more than compensate for the risks which it may be assumed are inseparably connected with this operation; but which, I think, may be much diminished in intensity by following out the system of operating and the details of treatment which I have ventured to particularise in the foregoing remarks.



## CASES OF RESECTION OF THE HIP-JOINT, WITH REMARKS.

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As the operation of resection of the hip-joint for disease in childhood, is an expedient as to the desirability of which the opinion of the profession is at present divided, I bring forward ten cases in which I have performed the operation in the Liverpool Infirmary for Sick Children, hoping that they may prove of some assistance in guiding us to a conclusion as to the merits of excision of this joint.

CASE 1.—William D—, æt. 4 years, was admitted December 11th, 1869, suffering from old-standing disease of the right hip-joint. The child was in a weak state, and much emaciated. He had a large excavated ulcer below the great trochanter; extreme pain was complained of on the slightest movement of the limb, while a distinct grating sound could be heard and felt in the joint. The discharge was copious and offensive.

Excision was performed January 8th, 1870, the femur being divided between the two trochanters. The head of the bone was found almost completely disintegrated. The border of the acetabulum was rough and carious, while its central portion had disappeared, the finger passing through to the pelvic fascia. From the cavity of the acetabulum was removed a loose irregularly shaped piece of necrosed bone.

After the operation the child was placed in the position to which he had been accustomed before, that is to say, lying on the sound side, with both legs drawn up.

In this case the improvement in health was almost immediate.

The wound, the greater part of which united by first intention, assumed a healthy action, all pain on movement ceased, and the child seemed to be making flesh.

On February 10th very gentle extension was employed by a light weight attached to the leg, and which in a few days brought the limb to the straight position, and the child was readily induced to lie upon his back. His convalescence was from this time uninterrupted.

On March 10th, about two months after the operation, he commenced the use of crutches, and was allowed to sit in a chair for a short time. The child was discharged April 28th, 1870, about three months and a half after the operation.

I had an opportunity of seeing the case quite recently. The child looks strong and healthy, and walks exceedingly well, without any support and with scarcely perceptible shortening, although his boots are both of the same thickness. In walking, he rotates the limb slightly outwards.

On measurement the difference in length between the two limbs was little over an inch.

CASE 2.—Alice L—, æt. 11 years, was admitted April 13th, 1870, suffering from disease of the left hip-joint. She was a feeble, strumous-looking girl. A brother of her's was also afflicted with hip disease.

There was considerable deformity, while her nights were much disturbed with starting pains referred to the knee. Over the buttock, and extending on the outer aspect of the thigh, almost half way down, was a large fluctuating swelling.

As this abscess was observed to be rather rapidly increasing, it was tapped, and a quantity of thin puriform fluid, containing fragments of white curdy material, was withdrawn. The puncture readily healed, the air having been carefully excluded. In a few days, however, the abscess refilled and inflammation of the sac having come on, it gave way at the point of puncture by ulceration. The discharge became very copious, and considerable irritative fever and prostration supervened. These unfavorable symptoms continued for the next fortnight, and it was quite

evident that her constitutional powers were fast giving way, and although the condition of the patient was extremely unsatisfactory, it was hoped that excision might afford a chance of recovery.

On May 14th, 1870, I operated. The head of the femur, which was lying in a perfect well of pus, was easily turned out, and the bone divided between the two trochanters. The cartilage and part of the osseous structure had disappeared from the head, as well as from the acetabulum, both portions of the joint being rough and carious.

After the operation the limb was placed in good position by a splint reaching from the foot up to the wound, secured at the knee and ankle, and steadied by one or two light sand bags.

For the first few days the patient seemed relieved, the wound was healthy, and there was an absence of all pain; but the discharge continued very profuse. She remained in this state, just on the balance, as it were, for a fortnight, then diarrhœa and hectic fever supervened, and she sank from exhaustion on June 19th, about five weeks after the operation.

There was no post-mortem examination.

CASE 3.—Margaret G—, æt. 10 years, was admitted February 21st, 1871, under the care of one of my colleagues, suffering from disease of the right hip-joint, attended with excessive discharge. She remained many months under treatment, but as operative interference was indicated, the patient was transferred to my care.

At this period she was suffering from heats and chills, profuse sweatings, and great exhaustion, her pulse being rarely under 140 per minute; while in addition to these very unfavorable symptoms, she had an ugly bed-sore over her sacrum. On the other hand her countenance was cheerful and the degree of emaciation not excessive. The pain was complained of mostly at night. The limb was in good position, extension by weight and the long splint having been persistently employed.

I excised the joint June 10th, 1871, dividing the femur immediately below the neck. The articular cartilage was entirely gone

from the head and acetabulum, which were both in a very carious condition, but little of the head remaining. After the operation a short Liston's splint was applied, with a sand-bag to steady the limb and prevent rotation. For several weeks the discharge continued to be very copious, while her pulse kept high, sometimes reaching 170.

Gradually, however, the pulse came down, as the discharge diminished, the hectic fever abated, and she slowly but steadily improved. Unfortunately, owing to the extremely critical state she was in for some time after the operation, together with the difficulty occasioned by the bed-sore, extension could not be strictly carried out, and consequently there was more shortening than would otherwise have resulted. Nevertheless, the limb promised to be a very useful one. In about two months she began little by little to use her crutches, and she was discharged October 5th, 1871, convalescing and able to go about with their aid.

The last time, about a year ago, when she presented herself, she was looking quite fat and strong, and able to bear almost her entire weight upon the limb, which was shortened to the extent of two inches.

CASE 4.—Joseph R—, æt. 7 years, was admitted March 11th, 1871. He was a delicate-looking boy, and had long been the subject of disease of the right hip-joint, which latterly had been attended with very free suppuration. As his health was perceptibly failing, under the continued and increasing discharge, resection was decided upon.

On July 8th, 1871, therefore, I excised, sawing the femur immediately below the neck. In this case, although the articular cartilage had entirely disappeared, the head was perfectly smooth and intact. From the acetabulum the cartilage was also gone, the bone being bare, but not carious.

For the first three or four weeks the boy made some little progress, the wound nearly uniting, the discharge decreasing, and the health slightly improving. Then for a few weeks he made no advance whatever, and from this time his strength began

to give way. Diarrhoea, together with chest symptoms of a tubercular character, came on, and he died on September 10th, 1871.

On post-mortem examination extensive tubercularization was found in both lungs.

CASE 5.—William McG—, æt. 11 years, a delicate-looking boy, who had lost both parents, was admitted December 9th, 1871, under the care of one of my colleagues, suffering from disease of the left hip-joint. The limb had been maintained in good position, but as the constant drain upon his system by a free suppuration, which had been going on for many months, was telling seriously upon his strength, operative interference was considered advisable.

Excision was practised March 23rd, 1872, and the upper extremity of the femur divided at the usual spot. During the operation, to facilitate turning out the head, I rather forcibly flexed the knee, and in doing so felt some adhesions in or about the joint give way.

The head of the femur was exceedingly rough and carious, and the acetabulum was in a similar state. The limb was secured in a comfortable position, in the same way as in the preceding cases. Within an hour or two of the operation the boy commenced to complain of pain just above his knee-joint, and on the following day there was considerable swelling about the joint. During the following week the boy seemed to be doing well, and the hip was going on satisfactorily, but still the pain at the knee continued, though relieved from time to time by poulticing; the swelling, having materially increased, now involved the lower third of the thigh. There was distinct fluctuation, and on the twenty-third day I opened an abscess on the outer aspect of the limb, about two inches above the knee-joint, having to cut through the vastus externus before the pus was reached.

A large quantity of pus was evacuated, and the patient seemed much relieved. It was hoped that the abscess, after a few days, would close up. This, however, was not the case; the daily discharge from it continued to be considerable, while the suppuration of the hip was comparatively trifling. He lingered on in much

the same state for many weeks, his strength keeping up in a wonderful way, till within the last ten days of his life. He died on June 8th, 1872.

Amputation of the limb, the only resource left, was not permitted by his friends.

After his death I had an opportunity of examining the knee-joint, and from its state there was no doubt of the existence of old disease, and the remains of adhesions were still to be seen. The articular cartilage was partially absorbed, and just above the joint, on the anterior aspect of the femur, was a large piece of exfoliated bone, the lower extremity of which had made its way into the articulation.

Here, therefore, was abundant cause for the ankylosed condition of the knee-joint. I may observe that up to the time of the excision knee disease was not suspected; my impression, when I felt the adhesions giving way on flexing the knee, was that they were not in the joint but were due to the limb having been kept in the straight position for a long period.

CASE 6.—Robert W—, æt. 8 years, was admitted July 27th, 1871, suffering from disease of the right hip-joint. He was a fair-complexioned boy, evidently of a weakly constitution, having lost both parents, presumably from consumptive disease. Notwithstanding treatment of the hip by rest, &c., a large abscess formed and opened, and as the discharge had for months continued excessive, and the patient appeared to be sinking, excision was determined upon.

On April 13th, 1872, I excised the joint. The head of the femur, which was considerably displaced, lying on the upper border of the acetabulum, was very carious; the acetabulum was similarly diseased. After the operation he made slow and not very satisfactory progress for the first six or seven weeks, then he seemed to come to a standstill, and in this state he remained for months; afterwards he improved and slowly convalesced, but with occasional periods of retrogression. He was discharged April 3rd, 1873.

The limb is an inch and three quarters short, but promises to be very useful, and he can bear his entire weight upon it. I saw him

in October, 1874; his health had much improved, though the sinuses had not all dried up.

CASE 7.—James J—, æt. 7 years, was admitted October 3rd, 1870, under the care of one of my colleagues, suffering from disease of the left hip-joint. He had been under treatment about two years when I took charge of him. The limb was in excellent position, extension by weight and the long splint having been advantageously employed. There were, however, numerous sinuses in connection with the joint, which had been discharging freely for months past, the discharge increasing rather than otherwise. The boy's general health was failing, and he was losing flesh. Excision was performed on November 16th, 1872. It was found that the head of the femur was, to a great extent, carious and disintegrated, and on the inner aspect of the neck, where it joins the shaft, there was a small cavity in the bone.

The acetabulum was rough and carious, but not to any great degree, and a moderate-sized sequestrum was removed from within it.

The patient made an excellent recovery; his convalescence was rapid and almost uninterrupted; the limb was kept in good position without difficulty. The discharge soon began steadily to diminish, and in two months he was up and learning the use of crutches. He was discharged April 3rd, 1873, in a most satisfactory state, both as regards his general health and the condition of the limb.

I have seen the boy recently; he is exceedingly well, and the limb is most useful. There is less than an inch and a half of shortening, and he walks capitally, not even requiring a high-heeled boot.

CASE 8.—Ann R—, æt. 10 years, was admitted June 7th, 1872, suffering from disease of the right hip-joint, of some months' standing, but as yet in an early stage of the disease.

The patient was a healthy looking girl, and there was no history of scrofula in her family.

For the first ten weeks or so the hip seemed to be going on

extremely satisfactorily, her strength kept up, and the treatment by rest with the long splint, together with moderate extension, had apparently answered most perfectly. Shortly after this time there were reasons to suspect that suppuration was taking place, a suspicion that soon became a certainty, as a large fluctuating swelling was observed about the hip and the upper part of the thigh, which steadily increased and ultimately threatened to point. The abscess was opened by incision, and treated antiseptically for some time, but the daily discharge, which was considerable, manifested no tendency to decrease, and after continuing some weeks the girl's health began noticeably to give way. After watching her for a few weeks longer I found the suppuration did not diminish, while her strength was being undermined, and being desirous not to delay interference further, excision was performed on April 14th, 1873.

I endeavoured in this case to follow out the subperiosteal plan recommended by Dr. Sayre, of New York. No difficulty was experienced in separating the periosteum until the trochanter major was approached, where it was found inseparable from the subjacent unossified cartilage, consequently the subperiosteal method was abandoned, and the operation concluded in the usual way.

The head of the femur and the acetabulum were more or less carious, the head particularly so at its circumference.

The day following the operation some swelling of the upper part of the thigh was observed, no doubt due to a certain amount of hæmorrhage that had occurred during the night filling up the cavity, although no blood had escaped externally.

For the next four or five days the patient was going on favourably, but inflammatory action commenced in the parts around the retained clots, followed by suppuration of the sac, which necessitated counter-openings at more than one point. This unfortunate occurrence proved a very serious drawback to the case, and, no doubt, affected its issue. Yet the patient appeared to be going on favourably for about two months, when erysipelas attacked her head and face, and just as she was convalescent the erysipelas suddenly reappeared in the hip and sinuses about it; under this second attack she sank in a few days, and died on July 16th.



CASE 9.—Arthur C—, æt. 8 years, was admitted February 12th, 1873, suffering from chronic disease of the right hip-joint, in connection with which were several sinuses. There was in this case considerable shortening and deformity; movement of the limb at the pelvis was limited, the parts in the neighbourhood being exceedingly rigid. The discharge was very fetid, but not excessive. On examination bare or dead bone was readily detected with the probe.

The boy had been in much the same state for about two years, and, though able to go about on crutches, he was in a weak and unsatisfactory condition, while the disease appeared to be perfectly stationary.

I excised the hip on July 11th, 1873, and found that the head and neck of the femur had entirely disappeared, whilst from the trochanter major downwards, for at least an inch in length, it was observed that the inner surface of the femur was not only rough and bare, but also was reduced to little more than half its thickness, apparently as the result of attrition against the border of the acetabulum, which presented a corresponding bare surface.

I removed about an inch of the femur, as far as the rough portion extended.

The cavity of the acetabulum felt quite smooth and as if filled up. The rough bare portions of the femur and border of the acetabulum did not seem carious, but simply devoid of periosteal covering.

The patient made a good recovery from the operation and his health was much improved, but no arrangement for extension was successful in rectifying the shortening, all the structures about the joint being excessively rigid and unyielding. He was discharged on November 13th, 1873.

CASE 10.—Mary Ellen W—, æt. 7 years, was admitted March 18th, 1874, suffering from long-standing suppurative disease of the right hip-joint. She had been for months a patient in another hospital in the town.

On admission both extremities were found rigidly drawn up, and the slightest movement of the right limb produced exquisite

pain. The discharge was profuse and fetid. The child was extremely wasted, and had the appearance of having been much neglected.

Excision was performed April 18th, 1874. The wound was not long in assuming a healthy character, and the discharge began to diminish materially. For eight or ten weeks she was apparently slowly convalescing, her general condition had improved, and the limb had been brought into good position, when rather suddenly œdema of the eyelids and face was observed, with flushing and feverishness. Albumen was found to be largely present in the urine.

The albuminuria did not yield to treatment, and from the date of its appearance she went on slowly losing ground, until she gradually sank October 10th, 1874, having become extremely emaciated, the œdema being limited to a puffiness of the face and feet.

There seems to be a possibility that the albuminuria may have had a scarlatinal origin in this case, as shortly before the œdema was noticed two cases of scarlet fever occurred in the ward the patient was in, and had to be transferred to the fever shed.

**SUMMARY.**—Of the ten cases it will be observed that five recovered and five died. Of these five recoveries, two (No. 1 and No. 7) were eminently successful cases, the patients being completely restored to health with useful limbs but little shortened. The third (No. 3) resulted in the restoration of the general health, but with the limb considerably shortened, though useful. The fourth (No. 6) was less fortunate, having a protracted convalescence, not yet perfected; the limb, however, is useful, but somewhat shortened. The fifth (No. 9) was successful in effecting improvement in health and bringing about in the hip that slow process of cure which nature seemed unable to complete. The shortening of the limb was scarcely lessened, but, with a special boot, it will prove a very serviceable member.

Of the five deaths, it will be observed that none were directly occasioned by the operation. Case No. 2 died five weeks after. No. 4 died nine weeks after. No. 5 died eleven weeks after.

No. 8 died twelve weeks after. No. 10 died twenty-five weeks after. The earliest, therefore, was five weeks, the latest twenty-five weeks. Of the entire ten cases, it is my firm conviction that, with one exception (No. 9), they were all inevitably doomed, as they did not appear to belong to that class (comparatively a small one) which result in natural cures.

I am much inclined to the belief that in most of these cases the operation was put off too long, and that had excision been practised earlier the result would, in several instances, have been different.

A few words respecting the operation. I am convinced of the immense value of Dr. Sayre's subperiosteal method, and purpose in my future cases adopting the principle, separating the periosteum from the bone and forcibly detaching the unossified cartilage of the trochanter major from the shaft of the femur, along with its adherent periosteum. In these cases it will be desirable to continue slight extension for a few months after the patient is able to go about.

## NERVOUS AFFECTIONS IN CHILDREN.

By P. M. BRAIDWOOD, M.D.

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WHETHER we regard the relative frequency of disorders of the nervous system in children as compared with adults, or the greater persistency among children of the effects of disease of the nervous tissues, or the imperfect pathology displayed by most works on children's diseases, we have sufficient reason for studying with increased care and patience this important class of disorders. It must be admitted that most organic diseases in children, and in particular those of the nervous system, have not yet had applied to them the more penetrating and improved methods of modern investigation and research. It is a very common opinion, held both in and out of the medical profession, that nervous diseases occasion a much larger number of deaths in childhood than any other class of diseases. Most modern writers, however, demur from such a generalisation, and agree with M. Barrier's remark, "that there is only one circumstance that in part justifies this opinion, and this is that the affections alluded to are almost always of a dangerous character, that they are beyond the resources of art, and that they furnish a very considerable relative mortality."\* During the last five years I have had the opportunity of seeing very many forms of nervous disorders in children, especially in connection with the Wirral Hospital and Dispensary for Sick Children, and from this experience (as is proven by the accompanying tables) I believe that nervous diseases, especially such as may be called organic, though more

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\* 'A Practical Treatise on the Diseases of Children.' By Drs. Meigs and Pepper. 1870. Fourth Edition. P. 435.

frequently met with among children, are not so fatal in childhood as in after years. Though structural changes of nervous tissue are more rarely fatal in children as compared with adults, yet they are of not uncommon occurrence, and are proportionately less mortal than like diseases of other organs. But inasmuch as the symptoms preceding death in the case of children are often referable to disorder of the nervous system, and are generally so prominent as to attract marked attention, it is no matter for wonder that popular opinion should attribute so much infantile mortality to nervous diseases, or that those who compile statistics from the Registrar-General's tables should discover a comparatively high rate of mortality among children to be due to nervous disorders.

As seen in Table I of our series, post-mortem examinations rarely reveal structural alterations of nervous tissue. The following remarks, on the contrary, will show that the majority of the nervous affections of childhood are due to vascular derangement or to causes acting indirectly on the nervous system.

It is obvious, then, that nervous diseases should be examined in relation to the tissue changes they present, the injured organs implicated, and the functional derangements they exhibit. But, when studying disorders of the nervous system among children, certain other factors deserve weight. The imperfectly developed tissues and organs of children exhibit a very different series of morbid alterations from those which are met with in fully formed tissues or in those undergoing retrogressive metamorphoses. It is to be noted also that in childhood there is a relative preponderance (even in viscera so essential to life as the brain and spinal cord) of those tissues which, like the connective tissues, are regarded, not as functionally useful, but rather as forming padding, and which readily become centres of morbid processes. Further, it must be remembered that certain diseases incidental to this period of life, as also certain physiological processes which occur in childhood, exert a very important influence on the nervous pathology of children.

Bearing these facts in mind, it will be best to group the nervous affections incident to childhood into three classes.

1st. Such as are due to disease of the membranes which cover the cerebro-spinal organs.

2nd. Such as are traceable to reflex causes (diseases or derangements of other viscera, of the blood &c.).

3rd. Such as have their origin in structural lesions of the nervous tissue, comprising the brain and spinal cord or their branches.

*I. Diseases of the membranes covering the brain and spinal cord.*

Modern pathology leads us to include under one comprehensive symptomatology various forms of this class of diseases which hitherto have been named and classified rather in accordance with symptoms or a supposed etiology than with reference to their true pathology. The medical practitioner's insatiable desire to learn what may enable him to overcome disease or to relieve suffering will not be forgotten, though the aim of these remarks is rather to stimulate the thoughtful reader to draw his own practical conclusions than to propose specific modes of treatment.

The membranes of the brain and spinal cord are very liable to congestion, either in consequence of their frequent subjection to external disturbing causes, as blows and falls, or to the greater distensibility of their blood-vessels. But in childhood the power of overcoming these temporary congestions and their results is so great that death from meningeal congestion or its sequelæ is comparatively rarely met with. Rilliet and Barthez, for example, "report 33 cases of tubercular meningitis against somewhat over 245 of pneumonia, 174 of bronchitis, 111 of typhoid fever, 167 of measles, and 87 of scarlet fever."\* The same authors, moreover, state that tubercular meningitis most commonly occurs between two and seven years of age, and that it attacks boys probably more frequently than girls. Simple acute meningitis and simple dropsical effusion into the cranium (among

\* Meigs and Pepper, *ibid.*, p. 437.

the membranes or into the ventricular cavities), without inflammation, which were formerly included under the term acute hydrocephalus along with tubercular meningitis, are very rarely indeed met with. We agree, therefore, with Drs. Meigs and Pepper in considering that the term acute hydrocephalus should be restricted "to the single condition of sudden effusion in or around the brain, independent of any inflammation; a condition which only occurs in connection with the causes of general dropsy, and especially with renal disease, and is, indeed, merely the most rare form of internal dropsy, and, as such, not to be regarded as a separate disease." True tubercular meningitis, or, as we prefer to term it, *adynamic meningitis*, occurs generally in children of tubercular or scrofulous parentage, and among such it is not uncommon for several children of the same family to be cut off by it. But while tubercular meningitis is often traceable to this constitutional predisposition, many instances ought to be ascribed to improper or imperfect nutrition during infancy. Hence it frequently happens that blows or falls on the head, violent moral emotions, and exposure to the sun, induce meningitis, which in a sickly or poorly nourished child develops an adynamic inflammation characterised by imperfect lymph thrown out on the pia mater. While, then, in children of scrofulous or tubercular parentage we meet with meningeal congestion induced by a fall, or pulmonary congestion succeeding exposure to cold, leading to the formation of imperfect lymph and forming the diseases termed tubercular meningitis and scrofulous pneumonia or phthisis; in children of healthy parentage, but imperfectly or improperly nourished during infancy, we find like congestions terminating also in adynamic inflammations.

The anatomical elements which characterise tubercular meningitis are minute, more or less opaque, greyish-white granulations or pellets of lymph, rounded or flattened, "varying in size from two fifths to four fifths of a line," scattered over the pia mater, especially over the base of the cerebrum and upper surface of the cerebellum, and invariably following the tracks of the blood-vessels, surrounding them and dipping with them between the convolutions. Around the circle of Willis they are generally most abundant.

On microscopical examination these lymph-pellets are seen to be "composed of numerous oval cells with a single nucleus, though there are also some larger cells mixed with these which contain several nuclei." In many instances, as has been observed by Cornil, Hayem, Bastian, myself, and others, the tuberculous granulations will be seen to envelope a small arteriole, and obstruct its calibre at this point. "There is also marked proliferation of the cells of the perivascular sheath of the vessel for a varying distance on either side of the granulation."\* The natural history of the process appears to be the following, and will be illustrated by the post-mortem examinations of cases to be cited hereafter.

An exciting cause, considered at the time to be too trivial to attract notice (as a fall from a chair), induces congestion of the cerebral meningeal vessels. This is aggravated by crying, by disorder of digestion, or by some similar influence, which tends to keep up the flow of blood to the cranium. Effusion of serum, and transudation or migration of leucocytes follows, and the naturally impaired constitution of the child shows itself by the formation of imperfect lymph, the subsequent blocking up of the vessels, and by anæmia of the brain from a greater or less arrest of the circulation through the circle of Willis. The venous congestion generally found accompanying meningitis is explainable by this mode also; in fact, it is the sequela to be naturally expected to follow the process we have described. In the more external arachnoid and among the intervening serous fluid various alterations are observable. The subarachnoid fluid is turbid in the vicinity of the inflammatory process, while the arachnoid membrane itself appears congested, sometimes thickened, and opaque. In one remarkable instance I met with some years ago the upper surface of both cerebral hemispheres was covered with a layer of lymph a quarter of an inch or more in thickness. Occasionally these several membranes of the brain are together implicated, and include also the dura mater in the inflammatory process. But it is to be noticed that while tubercular or adynamic meningitis is most frequently confined to the base of the brain, acute simple meningitis implicates generally the cerebral convexity. A further

\* Meigs and Pepper, *ibid.*, p. 438.



sequence of this pathological process is effusion of serum into the lateral ventricles, but the amount of this effusion varies greatly. Sometimes there are only a few drops or a teaspoonful, while in other instances it amounts to several ounces.

The further pathological alterations met with are such as might be expected to follow a diminished blood supply to and compression of the brain substance from its centre outwards. The whole organ seems to be enlarged, the convolutions become more or less obliterated, in most instances congestion of the brain substance itself is discernible, and in nearly all marked cases the ventricular lining membrane presents a granular appearance. "Tubercle of the brain itself may be occasionally met with," remark Drs. Meigs and Pepper (p. 441), "having no connection with the meninges, and varying generally in size between that of a millet-seed and hazel-nut, but reaching sometimes the volume of a pigeon's or hen's egg, or even that of half the fist." In a large proportion of instances of so-called tubercular meningitis minute deposits or tubercles are found in other organs, and by many pathologists such deposits are regarded as a necessary accompaniment or evidence of the tubercular character of the meningitis. That minute abscesses containing caseous or liquid pus or lymph should be met with in such a slowly progressing form of disease as chronic meningitis is not to be wondered at, and is referable to a mechanical cause like embolism rather than to a constitutional cachexy. All wasting diseases, especially in children, evince a tendency to secondary abscess formation without attempt at resolution; and the situation of such secondary abscesses may be in vascular, yielding viscera, as the lungs and liver, or in less vascular organs, as the skin and fibrous tissues, but there appears to be no determinate law regulating the location of such abscesses. Whether, then, the exciting cause be a fall leading to congestion of the cerebral or of the spinal membranes and sequent adynamic inflammation of the coverings of the brain or spinal cord, or whether the fall produces dislocation or fracture followed by adynamic local inflammations, if minute secondary deposits or tubercles are discovered after death these are to be regarded as indicative of the adynamic state of the patient's health when the

injury was received, rather than as the sign of an inborn tendency to a special disease (tubercle). In illustration of these remarks I shall select four cases coming under my observation which well exemplify the principal features of this treacherous disease, meningitis.

About six months before her fatal illness commenced E. W—, æt. 5½ years, complained occasionally of headache, and her appetite became impaired. She was naturally a precocious child, and when she said that the letters danced before her eyes while reading, her guardian thought she wished to be excused from her lessons. Change into the country improved her general health till about three months before her last illness, when she suffered severely from what her medical attendant termed mumps. This was followed by frequent bleedings from the nose. Her customary mid-day sleep she had either given up or she slept badly when she attempted it during the day. Squinting followed; she complained of being easily fatigued, and used to throw herself down on the sofa frequently, crying with pain in the head. These symptoms did not receive much consideration till she began to scream at intervals from pain in the head, showed pallor alternated by flushing, had occasional twitchings of the upper extremities and face, and constipation. Grinding of the teeth and a variable appetite led also to a surmise of the presence of worms.

The most marked and distressing symptom in this patient was intense pain in the head, passing from the forehead through to the occiput, and compared to a hammer striking on the vertex of the skull. It caused her to utter piercing screams, though naturally of a patient disposition, and it was relieved only by firm pressure with the hands applied to the forehead and occiput. Her pulse varied during her last illness from 116 to 140; her temperature was 99° to 103·4°. Occasional vomiting ushered in her illness; this was followed by constipation, twitching of the upper limbs during sleep, suffused eyeballs, with intolerance of light. Consciousness, however, remained unaffected to the last. This last illness was of one week's duration.

A post-mortem examination could not be obtained, but the

nature of the malady was in this instance only too plainly depicted by the symptoms exhibited during life. The case illustrates well the insidious nature of meningitis at its onset, and the inefficacy, in the majority of instances, of all known remedies to overcome this disease.

An instructive instance of recovery from meningitis came under my notice about four years ago.

Mrs. E—, when five months pregnant, sent for me because of pain in the right iliac region. Her symptoms gradually developed into the formation of a large perityphlitic abscess, which pointed posteriorly. This abscess I repeatedly punctured with a trocar; her delivery was followed by pyæmia, and then I opened the abscess freely. She gave birth to a son at the full time, but was confined to bed for four months subsequently. The child, when born, was small and very emaciated, and was reared "on the bottle." When six weeks old this infant began to show cerebral symptoms, throwing back his head and burrowing it in the pillow, starting suddenly from sleep and screaming; he had also diarrhœa, pyrexia in the evening, and constant vomiting. A few weeks later both his ears commenced to discharge pus, and the small bones of his left and afterwards of his right ear necrosed and were expelled. About this date also he was much troubled with a short dry cough, and he suffered severely from ophthalmia. When seven months old he became much worse; his head was of a very large size, and during several days he was very prostrate, scarcely moving, and took no food. His abdomen was much swollen and tense. During this illness he was rubbed all over with cod-liver oil, he received the compound syrup of the phosphates (Parrish), and his ears were syringed with tepid water containing carbolic acid. The fœtor of the purulent discharge from his ears was scarcely bearable, and during many months it continued to be very offensive. At this stage of his illness croton oil liniment was applied over different portions of the infant's head daily for four to six weeks, and some weeks later he was blistered behind the ears and iodine ointment applied all over his abdomen. The child began to improve when about twelve months old, but till then his life hung in the balance. He now

could take cod-liver oil internally, and gained flesh rapidly. He cut his first teeth when sixteen months old, and commenced to walk when two and a half years old. Now, when nearly four years old, he is an active, strong boy, running about like other children. His head does not now look out of proportion to his body, and the bones of the cranium are well ossified. He hears very imperfectly and his ears continue to discharge. He sees perfectly, but has strabismus still. He understands pretty well, but cannot speak, though he attempts to articulate. The mother of this child has two perfectly healthy children younger than this boy.

This case is interesting because of the meningeal attack being distinctly traceable to the improper nourishment supplied to the infant in utero by the diseased mother, and because of the child's recovery being due mainly to nature's instrumentality. No one who has experience of meningitic cases will deny, I think, that the spontaneous diarrhœa of infancy and the free suppuration through the ears were the principal means of relieving the meningeal congestion and effusion which carry to a fatal termination most of the sufferers from meningitis.

In the following two instances the diagnosis made during life was confirmed by post-mortem examination.

F. M. W—, æt. 14 months, is said to have fallen out of bed, but to have presented no symptoms for two weeks thereafter. She is said to have taken ill seven days before death, and during this time she was convulsed at short intervals and was only slightly conscious. Her mother belongs to a phthisical family. The cranial sutures were well ossified. On opening the cranium the dura mater was found to be very adherent over the longitudinal sinus. The meningeal vessels were full of blood, the brain substance congested and softened. A considerable amount of serum was found in the lateral ventricles and at the base of the skull. The arachnoid and pia mater all over the base of the cerebrum and adjoining surface of the cerebellum looked very milky, while here and there were to be seen whitish specks of scrofulous deposit traceable along the blood-vessels. These minute patches of lymph were especially distinct on the upper

surface of the cerebellum and in the immediate neighbourhood of the circle of Willis.

Again, A. H—, æt.  $1\frac{1}{4}$  year, about eighteen days before her last illness set in had a fall from a chair on her left side. When only a fortnight old she was attacked with whooping-cough, from which her brothers and sisters were suffering. The attack in her case was most severe, and she retained the characteristic cough for six months. Her parents are strong healthy people, though her relatives on the father's side are said to be subject to "fits." For three months prior to this illness her cervical glands had been enlarged. Two days after her fall my advice was asked, as the child was cross and could not hold up her head. On the following day she became unconscious and would not take food. During this, her mortal illness, she exhibited occasional convulsive movements of the extremities, squinted, kept her teeth firmly clenched, but had no cough. Her face was flushed; she sobbed, sighed, and moaned, but was conscious at intervals except during the last three days of her life. Her head at times felt extremely hot to the touch. The pulse all through her illness was very rapid and intermittent. The temperature in the axilla was  $103^{\circ}$  F. two days before death, and  $105^{\circ}$  F. on the day preceding death. When the cranium was opened the vessels of the dura mater were found congested. The brain substance was firm and looked healthy. The arachnoid appeared muddy, and at the base there was an increase of serum. Over the upper surface of the cerebellum, as well as over the adjacent surfaces of the medulla and cerebral lobes, patches of lymph varying in size were found scattered, and the characteristic minute specks of tubercular deposit were seen lying in the vicinity of the blood-vessels, especially those composing the circle of Willis.

In these two cases also all the ordinary remedial measures were employed. But neither counter-irritation applied in the neighbourhood of the base of the brain, sedatives to control the circulation and thus diminish the effusion of lymph, absorbents as iodide of potassium, or any other means, were of avail. Pur-gation even with mercury was not in itself sufficient to arrest the

progress of these serious pathological lesions, and the lesson taught by the recovery of the former patient with nature to aid the cure proved in this instance of value by showing that no means has yet been discovered whereby we can control inflammatory processes affecting the cranial base. Before leaving this first branch of our subject, the nervous affections of children, it will be well to summarise the most important symptoms presented by those suffering from meningeal inflammation, to refer to the prognosis in such cases, and to indicate the best modes of treatment.

The incubative, prodromic, or initiative stage of meningitis is certainly the most important as regards the use of means likely to induce recovery, but it is marked by symptoms so obscure that for the most part it is overlooked. An apparently trivial exciting cause is in these instances followed after an interval of fifteen days to three weeks, as in the cases above cited, by symptoms plainly indicative of meningeal congestion and inflammation. This apparently slight accident, as a fall, blow, or violent emotion, may induce headache, vomiting, and constipation or an irregular action of the bowels, but these symptoms are not generally persistent. The child recovers more or less completely from the effects of the disturbing cause, though more frequently it continues to exhibit signs of impaired health. Its appetite becomes bad and capricious; constipation and diarrhoea alternate; it is pale and gradually emaciates; it is listless and apathetic at intervals; complains of feeling weak and tired; it is irritable and peevish; study and exercise are alike distasteful; it is often restless by night, and it is not unfrequently troubled with a short dry cough. But none of these symptoms are pathognomonic, and are ascribed to intestinal irritation from indigestion, or, as in the case first narrated, the symptoms are supposed to be caused by worms. When, however, the pathological condition is fully established, or, more correctly speaking, when a further stage of the pathological process is induced, the three important symptoms, headache, vomiting, and constipation, become persistent and attract attention. By older children pain in the head is complained of, but in infants this is indicated by

rolling about of the head, by burrowing of the occiput in the pillow, or by rubbing the head with their hands. This symptom is generally accompanied by a sharp, shrill cry, called by Coindet the hydrencephalic cry. This cephalic pain is not persistent, but recurs at intervals, and, as might be expected, it is aggravated by any cause likely to increase the circulation through the brain, as raising of the child out of bed, intestinal disturbance, or a sudden start. Vomiting is almost a constant symptom, but persists generally only during the earlier two or three days of the illness. Constipation is also frequently observed during the first few days, but it is, I think, more probably caused than causative. It is generally followed by diarrhœa, and hence I believe the constipated stage to be induced by the meningeal congestion, while its sequence, diarrhœa, results from the flaccidity of the intestines caused by removal of the central congestion, just as on irritation of a nervous centre we produce contraction of the peripheric vessels, and the subsidence of such irritation is followed by relaxation of these vessels.

As the attack proceeds the child becomes dull and sad, or excited and irritable; its sleep is disturbed, and it is restless; it grinds the teeth, and at intervals, both when awake and during sleep (but most commonly while dozing), it utters a sudden, sharp, peculiarly shrill cry. As might be expected, the special senses exhibit an exaggerated action; the child shuns the light or closes the eyelids firmly and contracts the brows, while its hearing becomes painfully acute, so that it becomes irritated by the slightest sound. Often the general sensibility also becomes exaggerated, but the intellectual faculties remain undisturbed. There is exhibited very frequently at this stage of meningitis a certain expression of the countenance, a peculiar look, which to those who see many such cases becomes very characteristic of the nature of the malady. This symptom is described by Drs. Meigs and Pepper as, "in fact, a fixed or staring look, like that of one in a mild ecstasy." To me it suggests apprehension and suffering without being able to describe the feeling or refer it to any one part, while in infants the expression of countenance is that of indifference. This symptom, however, deserves more attention

than it generally receives and is of great practical value. Most children, moreover, when suffering from meningitis are observed to sob or sigh at intervals, and others are much troubled with hiccough. If these symptoms persist they become very characteristic of the nature of the disease. As might be expected, in this prodromic stage of meningitis the pulse is accelerated, and, as pointed out by Dr. Whytt, of Edinburgh, in 1768, it may rise to 120, 130, or even 140, while it is, "as a general rule, neither full nor tense, but rather soft and compressible." The ophthalmoscopic characters presented by meningitis, though probably not required *per se* for diagnosis, may with advantage be here described. The ophthalmoscope, in fact, I have found of value in meningitis only when the disease is so slowly progressive as to be indicated very doubtfully by symptoms. In meningitis "the obstruction to the return of venous blood through the sinuses produces in both eyes, but especially in the one corresponding to the hemisphere where the inflammation is most intense, congestion and œdema of the optic papilla and surrounding tissue (Bouchut's peripapillary congestion), tortuosities and varicosities of the retinal veins, and occasionally thrombosis or rupture of these vessels, causing minute hæmorrhages in the retina. In some cases the size of the globe is increased, owing to hydrophthalmia. These lesions," remark Drs. Meigs and Pepper, "are, indeed, more frequent in tubercular than in simple meningitis, since the inflammation and resulting exudation are more apt here to involve the base of the brain, and cause a greater degree of obstruction to the circulation."\*

The second stage of a meningitic attack is characterised by nervous symptoms; the intermittent peripheric irritation of the first stage of the disease caused by an intermittent meningeal congestion gives place now to persistent nervous symptoms produced by a continuous congested state of the cerebral meninges. The headache, spasmodic shrieking, and occasional convulsive twitchings of the extremities, observed in the first stage of meningitis, are succeeded in the second stage of the disease by continuous muttering delirium, by an expression of wildness, and by

\* Drs. Meigs and Pepper, *ibid.*, p. 445.



somnolence from which the patient can at first be roused, but which soon passes into coma. The general sensibility is diminished, but often the special senses continue to be abnormally excited. Pallor and flushing still are observed to alternate, but the congestive state passes off much more gradually now than formerly. This stage is further characterised by the symptom to which M. Trousseau has given the name of "tache méningitique" or "tache cérébrale," and which is practically of much value. The slightest pressure with the finger on the skin, especially of the face or forehead, causes a red or pink spot, which, at first faint, becomes more intense in colour, remains for a few moments, and gradually fades away. This characteristic appearance on the skin is produced by slight pressure, and so also congestion of the face is induced by any slight exertion, as in moving or in taking food, and the discoloration in both instances passes off very gradually. Occasionally convulsive twitchings of the face are observed to break the monotony of the somnolent stage of the disease. The eyelids are kept partially closed, and beneath them the eyeballs can be observed rolling about automatically. The pulse falls sometimes even to the normal standard or lower, but it becomes also irregular in force and frequency.

This second stage passes, generally two or three days before death, into that characterised by decubitus and coma. As might be inferred from the pathology of tubercular meningitis, the decubitus is generally confined to one side, and gradually involves the other side, just as the convulsions of the limbs are generally found to affect either side alternately. The leg is flexed on the thigh, and the thigh on the abdomen, while the elbow is also flexed and the arm fixed firmly to the side. The pulse and temperature, as a rule, begin to rise about the third day before death; but occasionally the thermometer indicates a fall, even as low as  $79.4^{\circ}$  (Reynolds's 'System of Medicine,' vol. ii, p: 379). The comatose stage is very lingering, and, in this respect, characteristic of meningitis.

From these remarks it might be inferred that meningitis always assumed the adynamic or tubercular form; and, indeed, what may be termed idiopathic meningitis may be regarded as always

running a chronic course, while acute simple meningitis, not produced by injury, is an extremely rare disease. Simple acute meningitis is, however, distinguished from the adynamic form by running a rapid course, by presenting the symptoms of acute inflammation, as frequent convulsions, acute headache, excessive restlessness, and violent delirium; by showing no intervals of complete cessation in the symptoms and apparent recovery, and by attacking the most robust while in blooming health. In its pathology, too, acute meningitis differs from tubercular meningitis. Acute meningitis is characterised often by simple vascular congestion and serous effusion, but when lymph is formed this covers a more extensive and continuous surface than in tubercular meningitis, and is found to occupy generally the convexity of the cerebrum.

As regards the *prognosis* in meningitis, when the symptoms are markedly characteristic of either the acute or the chronic form of the disease, we should, I think, hope for but not expect recovery. Cases presenting all the earlier symptoms of tubercular meningitis, and even isolated examples of this disease in its second stage, have been known to recover; therefore there is reason for hope. But, seeing that post-mortem examinations most generally disclose in such cases tubercular infiltration of other viscera besides the cerebral meninges, and as the lymph deposit probably *precedes* the other pathological lesions, and accordingly renders them more dangerous to life, there is not much ground for expecting recovery. The cerebral meningeal vessels have their resiliency interfered with by lymph adhesions and their calibre encroached upon by multiplying lymph-cells; hence they cannot relieve themselves, and like the atheromatous vessels of advanced years remain in a chronic state of full-bloodedness.

Lastly, as regards treatment. In this also we are guided by pathology. To be of use remedial measures require to be applied early, promptly, and efficiently. If the chronic congested state cannot be removed, it can, at all events, be modified. Rest, accordingly, is the primary indication, and this is procured both by position and by the use of means which control the general circulation. Physical rest and quiet, sedative medicines, and

even occasionally an early employment of leeches to the back of the ears, will diminish the flow of blood to the cranium. Again, counter-irritation by purgation with minute doses of calomel, by the occasional employment of croton oil to various portions of the vertex, and by hot baths, are of eminent use; but in the use of counter-irritants I am inclined to think the error generally made results from a *nimia diligentia*. I blame myself, and I believe those who reflect on their treatment of such cases will find frequent occasion of self-blame, in the too active use of counter-irritants, especially of croton oil. Extrême quiet of body and of the nervous system, counter-irritants (especially sinapisms to the nape of the neck and behind the ears), and very nutritious, simple diet, in which the food is given frequently and in small quantities, cold applications to the head, especially when very hot, and gentle purgation, will, I believe, be found most efficient in relieving symptoms and aiding recovery. Iodide of potassium is generally recommended, but in my experience it is only of use if the disease can be considered as arrested, while cod oil and steel prove useful adjuvants in restoring health.

## II. *Nervous diseases traceable to reflex causes.*

Under this head are included very many forms of nervous affection, and their characters as a class will be indicated by the examination of a few of them individually, and will be illustrated by cases I have recently seen.

As shown in the accompanying table of certified causes of death, among the 68 instances in which the certificate refers death to cerebro-spinal lesions, 12 were stated to be deaths from convulsions and enteritis, 4 meningitis and enteritis, 11 convulsions and pertussis, and 8 simply convulsions. Hence more than one half of the total certified causes of death among children indicated a morbid alteration in the cerebral membranes, excited by peripheral irritation, and the major half of these deaths occurred from convulsions excited by intestinal disease.

Moreover, of the whole number (68), in only 6 instances was the disease localised within the cranial cavity, and in only one case was the spinal cord alone affected.

Daily experience, then, requires us to recognise as *the* most frequent cause of nervous affections in children some peripheral irritant, either disease of an organ or some blood disease. Such irritants, too, induce disorder of the membranes only of the cerebro-spinal system, especially of the cranial membranes; and very rarely does the meningeal congestion or the meningeal inflammation induce what might be termed a sympathetic or simultaneous congestion or inflammation in the nervous tissue proper.

On this account it is to be observed that nervous diseases in childhood differ from like affections in adult life or in old age in two particulars—the abnormal pathological process existing principally in the cerebro-spinal membranes; the symptoms exhibited are those of active movements, rapid muscular contractions and relaxations—in other words, convulsions; and, secondly, as is learnt from Table 1 accompanying this paper, post-mortem examination very rarely indeed enables us to detect either by the naked eye or microscopically any alteration of the nervous tissue. Here, then, a marked and important contrast is found distinguishing the nervous affections which may occur during the years of growth from those met with during the period of retrogressive metamorphoses. In youth the cerebro-spinal membranes are generally alone implicated, and the symptoms exhibited are convulsive; after adult age has been reached, and during old age, the nervous tissue becomes readily diseased by itself, or in connection with its enveloping membranes, while loss of power or paralysis is the symptomatic form most commonly seen.

The most commonly met with member of this second class of nervous affections in children, and withal a rare but truly an occasional cause of death, is that type of convulsions (popularly termed “inward fits”) arising from intestinal irritation. An infant receives some food which it is unable to digest, or a change in the weather induces cold feet in the infant or acts in such other way as to excite

intestinal congestion with its natural sequence, flatulent distension. From the imperfectly developed muscularity of the intestines in childhood this distension is not readily overcome and the flatus expelled, while, if overlooked, in a few days it becomes so excessive as to press upwards the diaphragm and affect the performance of their functions by the thoracic viscera. But irritation of the intestinal cavity followed by convulsions may be explained in another way, and this probably is the *modus operandi* in instances where the cerebral symptoms succeed shortly the intestinal disorder. In cases where engorgement of the blood-vessels of the intestines is induced rapidly by the application of an excitant to the intestinal mucous membrane, as when indigestible food is taken, or vermes are present, an alteration in the circulation, implicating of necessity secondarily the cerebral vessels, may be regarded as a sufficient explanation of the convulsive attacks exhibited by such children. Or, perhaps, the sympathetic ganglia in the abdomen are the means of conveying the impress of the irritation from the intestines to the heart; and this appears to be the more probable course pursued, for on post-mortem examination Peyer's patches are generally the only portions of the intestines found diseased. Convulsions induced by intestinal irritation or by intestinal disease present many modifications which are really differences only in degree. The following case is a good illustration of these remarks.

H. L.—, æt. 15 months, was brought to me about the middle of August, suffering from diarrhœa; she improved, but had relapses and again recovered, and thus the case progressed for two months. She had not been weaned, and received farinaceous food, weak tea, &c., as well as her mother's milk. She became gradually more and more emaciated, but the wasting was at death far from extreme. She was brought for medical advice at intervals of three weeks. During the last fortnight of her life she was troubled with a short dry cough. The first convulsion occurred at 2 a.m. of the sixth day before her death. Twenty-four hours later she had another fit; she had two on each of the two succeeding days, and five on the day previous to her death. During these days she was not purged. When seen on the day before her

death her respiration was hurried and laboured, her pulse not very rapid, but irregular; she was unconscious, but did not squint. During a convulsive attack she had contractions of the muscles of the face and of the limbs on alternate sides; she squinted and closed the jaws firmly only during the paroxysm. On post-mortem examination, twenty-nine hours after death, the cerebral meningeal vessels (especially the veins) were observed to be congested, and there was slight excess of ventricular fluid, while the brain-substance was healthy. In the thorax no indications of disease were found. The small intestines were seen congested at intervals, and several of Peyer's patches presented beautifully the granular appearance so well seen in "granular eyelids." There was catarrh of the large intestine, but no other signs of disease. This form of nervous affection, then, is indeed a sequence of peripheral irritation rather than a primary disease. The original and true ailment is overlooked till the symptomatic secondary stage attracts attention. In many instances, however, the nervous disorder succeeds the primary lesion so rapidly as entirely to conceal the *origo mali*, and the fit is treated medicinally while the piece of raw apple injudiciously given by the parent is never thought of. It is important, therefore, that medical men should refer most convulsive attacks in children to intestinal derangement, or some other peripheral irritation, as thereby they would rarely indeed fall into an error.

The symptomatology of such cases is sufficiently simple. A child becomes feverish, and is observed to be so generally towards bedtime only, while during the remainder of the day it may apparently be in good health. It is restless in the night, tossing about, throwing off the bedclothes, grinding its teeth, crying, speaking, moaning, or starting in its sleep, and sometimes twitching slightly the muscles of the face. In a few days it becomes fretful and irritable, disturbed by slight external excitants, wakened by the slightest noise, and, if an infant, vomits its food at intervals. Vomiting rarely occurs among children over two years old, except at the onset of a fever or at the commencement of some cerebral disorder. The pulse may be normal or somewhat accelerated, and in infancy the throbbing

of the anterior fontanelle is a symptom deserving of notice. The bowels act irregularly, but diarrhoea generally prevails, while the colour of the motions is greenish or whitish, and their odour very offensive. The abdomen is distended, the thighs flexed on the abdomen. Even at this stage there may be cerebral disorder without any more patent sign. In infants especially the important premonitory signs, as crying, vomiting, distension of the abdomen, and flexure upwards of the lower limbs, are overlooked or are interpreted incorrectly until the child is observed to become rigid, clench its hands, firmly close its mouth, roll about the eyeballs, and become pallid with a blue discoloration around the mouth and lower eyelids and along the *alæ nasi*. It is then pronounced to be "convulsed inwardly," and if the abdomen is examined it will be found generally to be much distended with flatus and the lower extremities to be cold. These fits commonly last only a few minutes, and the child remains thereafter for some time in a partially conscious state.

In older children, however, the cerebral disorder sets in more gradually, and is indicated by a distinct series of symptoms. The child becomes drowsy, indifferent to surrounding objects, or complains of pain in the head. Vomiting ceases during this second stage, and constipation succeeds the diarrhoea. The pulse becomes weak, irregular, or intermittent. The child becomes convulsed at first, generally at regular intervals, but by-and-by the convulsive attacks succeed each other more and more rapidly, and the child may die in one of these, as did H. L—, whose case has been narrated above, or it may become comatose and gradually sink.

The proper *treatment* to be pursued is sufficiently evident; the real difficulty consists in the diagnosis. Intestinal irritation from improper food should be corrected by some mild aperient; intestinal disorder from acidity or any like cause requires the exhibition of alkaline and other soothing remedies (*not opiates*); while a proper diet and attention to keeping the body very warm are important, though often too slightly esteemed, aids to recovery. To shorten the convulsive attack and to relieve the irritability it has excited a hot bath will be found most serviceable, while cold

applied to the head thereafter is felt by the child to be very soothing. But occasionally, even after the exciting cause of the convulsions has been removed, the child continues to have fits or exhibits nervous irritability in some milder form. In these instances sedatives are required, and the best are belladonna, succus conii, gelseminum, bromide of potassium, and chloral, especially the first two combined. The most troublesome variety of these convulsive attacks is that occasionally met with where children under two months old become convulsed, as the mother says, "without any cause." Sometimes on being carefully cross-questioned the mother will plead guilty to having given the infant, at intervals, spoon-meat, and the attack is naturally attributed to this. But in the instances I now refer to no spoon-meat has been used, or if it has been used its administration has been stopped, yet the fits continue to recur. When such is the case the cause seems to be the mother's milk. The mother looks healthy, she is careful with her diet, the supply is abundant, the quality of the milk, as far as can be judged by simple tests, is good, yet it does not agree with the child. In such cases the infant generally vomits more or less of the milk, but the portion that remains appears to be the source of irritation, for it is generally some time after being nursed that the child becomes convulsed. These cases are very obscure, but it is well to bear in mind the possibility of the mother's milk not agreeing with the infant and to forbid nursing when convulsions continue to recur after every conceivable source of intestinal irritation has been removed. That spoon-meat feeding is the most common cause of convulsions among children in England is shown in a remarkable way by the following remark of the Registrar of Births and Deaths in Scotland:

"Even the customs or habits of the peoples of each of the countries are reflected in the deaths. Thus, the English people are in the habit of stuffing their babies with spoon-meat almost from birth, while the Scotch, excepting in cases where the mother is delicate or the child is out nursing, wisely give nothing excepting the mother's milk till the child begins to cut its teeth. The English practice occasioned the death by convulsions of 23,198



children under one year of age during the year 1868 out of 786,858 births; in other words, caused one death from convulsions in every 34 of the children born during the year in England. In Scotland during the same year only 312 infants under one year of age fell victims to convulsions out of 115,514 children born during the year; in other words, one death from convulsions in every 370 born during the year. What a saving of infantile life would occur were the English to adopt the rational Scotch system!"

The second largest class of nervous affections in children traceable to reflex causes are those produced by blood-poisoning. The best example of these is presented by convulsions ushering in one of the exanthemata, and the most frequent and most fatal form of exanthem commencing thus is scarlatina. On this point Drs. Meigs and Pepper remark, "We may conclude, therefore, that convulsive symptoms appearing early in scarlet fever indicate a highly dangerous and, in all probability, a fatal attack, while severe and especially prolonged delirium or coma are also extremely unfavorable symptoms, but somewhat less so than are those of a convulsive character." My own experience is that convulsions ushering in scarlet fever are almost always fatal, while a convulsive attack occurring immediately after the rash is developed or occurring simultaneously with a profuse cutaneous eruption is a serious but not so fatal symptom. It is further worthy of note that this form of attack characterises certain epidemics, as that prevailing at present, while at other times it is very seldom observed. Convulsions ushering in scarlet fever are, however, in my experience, much more fatal than are uræmic convulsions induced by scarlatinal nephritis. To instance now some cases which have come under my notice.

L. W—, æt. 6 years, died on November 6th, 1872, with the following history of her illness. On the day preceding her death she was out playing as usual and appeared to be in robust health. Towards bedtime she was observed to cling to the fireside and her face was flushed, but she did not complain. She is said to have slept well and to have wakened as usual. Half an hour later, about

6 a.m., she had a convulsion; about 6.30 a.m. I was summoned and recommended a hot bath. She appeared to be soothed by the bath and was apparently better, but "was never quite out of the fits." At 9 a.m. I found her looking livid, the muscles of the body firmly contracted; the left side of the face and corresponding upper extremity twitching, but the rest of the body still. I gave her chloroform, which subdued the rigidity, but the convulsions returned when she recovered from the anæsthetic state. Another hot bath was administered, but this did not produce perspiration; a livid rash was observed obscurely shining through the skin. She died a few hours later.

T. B—, æt. 3½ years, was in excellent health and spirits till 11 a.m. of October 20th, 1874, when he complained of being sick and became suddenly pallid. He went about the house, however, took his dinner, and thereafter had a sleep. On waking from this sleep he commenced to vomit, and this continued at intervals during the afternoon. He appeared to be bilious and much troubled with flatulence; scarlatina was not suspected. In the evening a doctor was summoned, who treated the illness lightly. During the night, in his sleep, he was grinding his teeth, rambling, and talking, and shook as if in a rigor. About 4 a.m. he had a convulsion, and at 7 a.m. another; each of them was said to have lasted ten minutes. He received a very hot bath thereafter, but did not perspire. When I saw him at 11 a.m. his respiration was hurried and laboured; his face very flushed; his pulse scarcely perceptible; his tongue very foul; he was unconscious, and his pupils unaffected by light. While standing at his bedside he had a convulsion which lasted for about three minutes. During this attack he held his breath; each side of his face twitched alternately; his limbs were rigid in extension; his jaws were firmly closed; redness of the face, lividity, and pallor rapidly succeeded each other, and were followed by moaning, hurried and laboured respiration. The pulse could be felt gradually to return. The rigidity of the lower limbs passed off in three minutes after the convulsion ceased, but the upper limbs continued rigid for some minutes longer. He died in about an hour and a half after this attack without regaining consciousness. In this instance there was no

guide to the diagnosis of scarlet fever except the general prevalence of the fever at this time.\*

In the case previously narrated the diagnosis was assisted by the careful observation of a rash which was obscurely apparent. In the following instance scarlet fever was the evident cause of the convulsions, because two other children suffering from scarlatina slept in the same room as the patient.

C. B—, æt. 4½ years, during the night of September 9th, 1874, was observed to be restless, but wakened in the morning apparently in her usual health, breakfasted, and went out to play. She came into the house two hours later, lay down, and soon thereafter she vomited. This appeared to relieve her and she resumed play again. After dinner she ran out again to play, but returned in about an hour and lay down. Having slept well for about an hour she wakened with diarrhoea, and shortly thereafter she had a convulsion. She became unconscious; her body was rigid; her extremities twitched spasmodically; her pupils were unaffected by light, and her jaws firmly closed. She never recovered consciousness and died within eight hours from the commencement of her illness. A hot bath and an enema containing a sedative had no effect in soothing her.

These examples illustrate well the appalling fatality and the rapidity with which this form of blood-poisoning destroys life. No time for reflection is given, no interval for trying remedies; and yet *after death no lesion is detectable*. The poison appears to act through and on the blood, and on the blood alone. The only analogue afforded, moreover, is death in the lower animals caused by the injection of certain fluids. If a few drops of a highly irritant, intensely inflammatory animal secretion be injected into one of the lower animals death results in a comparatively short space of time, and in much the same manner as we observe it to occur among those suddenly and severely poisoned by scarlet fever. Dr. Burdon-Sanderson found that by injecting into the peritoneum of a guinea-pig a few drops of the "exudation liquid charged with bacteria," which he had produced in a similar animal by injecting

\* The diagnosis was confirmed by other members of the family subsequently suffering from scarlatina.

a solution of ammonia subcutaneously, this highly inflammatory exudation liquid induced peritonitis of great intensity, which terminated fatally in from twelve hours to two days. When, again, the inflammatory liquid from the peritonitic guinea-pig is injected into the peritoneal cavity of a dog it dies, he says, "with the same symptoms and post-mortem appearances which are produced when an animal of the same species is infected by the injection of putrid animal liquids."\* Animals thus treated may pass at once into a state of collapse, or more commonly they exhibit "muscular twitchings and shiverings. The supervention of collapse is indicated by failure of muscular power, retching and vomiting, which are soon followed by diarrhoea. The retching is associated with violent spasmodic muscular movements." Here, then, we find in animals poisoned by the artificial injection of putrid animal liquids a striking analogue to the children described above poisoned by the scarlet-fever contagium; collapse, muscular twitchings, vomiting and diarrhoea, are exhibited by both classes of victims, but in the human subjects we have superadded delirium and other cerebral symptoms due to the higher development of the nervous system in man.

In the 'Lancet' of November 7th, 1874, will be found an instructive paper by Dr. Clifford Allbutt, "On the Modes of Death in the earlier days of Scarlet Fever," well worthy of careful perusal. After stating the four modes in which he considers that scarlet fever may threaten life, viz., hyperpyrexia, specific poisoning, malignancy, and syncope or asthenia, Dr. Allbutt remarks "that in most cases the distinction is tolerably easy, though in others the singleness of the mode may be marred by the coincidence of one or more of the other modes." In my experience two or more of the series of symptoms characterising each of these modes of death are always detectable by close observation; but the important point as regards successful practice is for the practitioner, being aware of these several groupings of symptoms, to recognise the stage of the seizure, to interpret correctly the relative gravity of the symptoms so as to form a correct prognosis, and to use the

\* Dr. J. Burdon-Sanderson, 'Preparations showing the results of certain experimental inquiries relating to the nature of the infecting agent in pyæmia.'

treatment appropriate for the alleviation of the condition then existing.

Blood-poisoning, then, is a very important and not uncommon cause of nervous affections in children. I have described only the condition due to *acute* blood-poisoning by one special variety of fever poison, but similar symptoms are occasionally found to usher in other fevers, as measles and enteric fever; while delirium, slowness of speech, occasional slight muscular twitchings, or starting in sleep are the almost invariable accompaniments of severe pyrexia, whether induced by a fever poison or by some local peripheral irritant. So also muttering delirium, jactitation, and coma indicate merely the typhoid or syncopic condition whatever may have been the original form of blood-poisoning. But, in my experience, severe nervous symptoms, if they can be supposed at all to indicate the accession of scarlet fever, should lead to an extremely *wary* prognosis and to judicious *active* treatment; and even then in the majority of instances such a beginning terminates fatally. One distinction further deserves attention; and this was well illustrated by a case which came lately under my care.

A child about seven years old died from scarlet fever within twenty-four hours after she was supposed to have taken ill, and though she exhibited a profuse rash; on the following day a younger sister, about  $3\frac{1}{2}$  years old, took ill with similar symptoms, and I was summoned in the evening. I saw the patient for the first time about twelve hours after she was seized. She then presented the characteristic appearance of a case of severe blood-poisoning; respiration was hurried and laboured; pulse not extremely rapid; great restlessness, with some unconsciousness from which she could be easily roused; distension of the veins, especially of the face; temperature of  $104^{\circ}$  (I have observed the axillary temperature rise to  $106^{\circ}$ , but have never reached  $108^{\circ}$ , which is mentioned by Dr. Allbutt as being occasionally obtained); pungent heat of the skin; dryness of the lips and tongue; scanty urine; and great thirst. She was placed in a very hot bath for a few minutes, and, when lifted out of it, she was rolled nude and wet in a warmed blanket, she then received a little wine and water, and was laid in bed for twenty minutes. She fell during this interval into a pleasant

sleep, from which she was roused to be dried, dressed, and fed, and on being again laid down she slumbered sweetly for a couple of hours, and was interrupted only to get food. About four hours after my first seeing her she had a threatened relapse of her symptoms, but this I believe was due to her being allowed to fast too long. She soon recovered from this state and made an excellent convalescence. In instances of this kind, which might be described as cases of pure blood-poisoning as distinguished from those I have before narrated, where the impurity of the blood has led to perversion or arrest of the functions of the nervous system—in cases of pure blood-poisoning before the nervous system has been much involved—the active employment of judicious treatment may be expected to be almost always successful.

The symptomatology, then, of the nervous affections produced in children by reflex action from the application of a peripheral irritant, as a febrile contagium, indicates paralysis of the vasomotor system, then meningeal congestion, probably both of the brain and medulla, and occasionally ending in cerebral serous effusion. As regards treatment, I agree with Dr. Allbutt in strongly advocating the early employment of a bath in such cases; but my experience has been that whereas cold affusions and the form of bath described by Dr. Allbutt in his paper are no doubt very useful, their application is attended with extreme danger unless they are properly conducted, and I have met with very few persons indeed in whom such trust can be placed. For many years past, accordingly, I have invariably used a very hot bath and the warmed blanket wrapping immediately after it, as I think this is attended with less risk. Such a bath should, I think, be given once in every twenty-four hours as long as the eruption is visible. It is also important to give food and small quantities of stimulants at *very* short intervals of time till the brunt of the pyrexia has been well overcome. As regards medicines in those instances characterised by convulsions, the practitioner feels bound almost to give some sedative even though he may doubt its efficacy; and in such instances if sedatives are of any avail I believe bromide of potassium and gelseminum are the best, and they should be combined with quinine.

Many other forms of nervous derangement succeed scarlet fever and like blood-poisonings, but these I shall group into the third class afore specified, viz., those nervous diseases due to structural changes in the nervous tissues proper. Some further varieties of nervous affections belong to the class at present under consideration, as cerebral anæmia from fever or from cardiac or pulmonary disease, nervous cough, herpes, laryngismus stridulus, &c., but the space at my command does not allow me at present to complete my remarks, though I hope to do so on a future occasion.

*TABLE showing the pathological lesions found in ten cases where it was considered necessary to examine the cranium and where permission was given to do so.*

- G. R. S—, æt. 8 months. Symptoms during life pointed to what is termed by many authors "acute hydrocephalus." Post-mortem appearances characteristic of acute meningitis, with effusion of serum and formation of recent lymph.
- J. R—, æt. 2 years. Symptoms during life were those of tuberculosis and of intussusception. Autopsy revealed a congested and softened brain and miliary deposits in lungs mesenteric glands and small intestine. In the ileum were also found several more or less complete intussusceptions.
- T. W—, æt. 8 months. Symptoms during life were diarrhoea and convulsions. Post-mortem appearances were congestion of cerebral membranes and some effusion into the lateral ventricles. No signs of tubercle anywhere. Ileum congested at intervals.
- G. Y—, æt. 5 months.—Symptoms during life pointed to acute cerebral meningitis. Autopsy revealed brain substance almost fluid, and membranes covered with a layer of lymph almost half an inch in thickness.
- A. M. H—, æt. 1 year.—Symptoms during life were those ordinarily included by the term hydrocephalus. Autopsy exhibited traces of scrofulous meningitis over the base of the brain and between the cerebral hemispheres, with effusion into the lateral ventricles, also tubercles in right lung and liver, and scrofulous abscesses over the body.
- A. S. T—, æt. 7 weeks.—Symptoms during life were those of whooping-cough, with pneumonia of the pulmonary apices and convulsions. Post-mortem examination showed the meningeal vessels congested and the brain substance softened; all the other organs healthy.
- A. H—, 1½ year old.—Symptoms during life led to the diagnosis of scrofulous meningitis, and this was confirmed by a post-mortem examination.
- F. M. W—, æt. 14 months.—Was a case identical with the last in its symptomatology and pathology.
- C. H. J—, æt. 3½ years.—Symptoms during life referable to meningitis, with destruction of brain substance. Autopsy revealed a general opaque appearance of the arachnoid; inflammation and subsequent adhesion of the membranes over

the left temporal sinuses; a large amount of recently effused lymph connecting the under surface of the right cerebral hemisphere with the corresponding cerebellar surface. In the centre of the right cerebral hemisphere was an ovoid patch of grey substance, through which white streaks radiated; the whole of the surface of the right cerebellar lobe was covered with scrofulous lymph nodules. Both lungs exhibited tubercular deposit, while the abdominal peritoneum was firmly agglutinated to the parietes and in its various layers, and presented numberless pellets of tubercular lymph scattered through it. All the other viscera were healthy.

- A. B—, *æt.* 1½ year.—Symptoms during life were those of diarrhoea and convulsions. The post-mortem examination showed slight congestion of the meningeal vessels in the cranium, while the brain substance was healthy. The ventricular fluid was slightly increased in amount. No indications of scrofulous disease to be found anywhere. Small intestine congested at intervals, and Peyer's patches showing a granular surface. Catarrh of mucous membrane in the colon.

*TABLE of certified causes of death in children under 12 years of age.*

Acute hydrocephalus ...	...	...	...	5
Convulsions ...	...	...	...	8
" and cynanche tonsillaris ...	...	...	...	1
" and meningitis ...	...	...	...	2
" and pneumonia ...	...	...	...	3
" and bronchitis ...	...	...	...	2
" and enteritis ...	...	...	...	12
" and pertussis ...	...	...	...	11
" and scarlatinal nephritis ...	...	...	...	1
" and spina bifida ...	...	...	...	1
" and scarlatina ...	...	...	...	3
" and syphilis ...	...	...	...	1
" and marasmus ...	...	...	...	1
" and suppressed measles ...	...	...	...	1
" and tuberculosis ...	...	...	...	2
" and dentition ...	...	...	...	2
" and peritonitis ...	...	...	...	1
Meningitis and enteritis ...	...	...	...	4
Meningitis ...	...	...	...	6
Tetanus and icterus ...	...	...	...	1
				68
Total number of death certificates given ...				258
" " " for children under				
12 years old, in which cerebro-spinal lesions are				
stated ...	...	...	...	68
Cases in which autopsies were held ...				38
Autopsies in which the cranium was examined and				
pathological lesions found ...	...	...	...	10



*The common forms of nervous affections met with among children under 7 years of age, as obtained from the records of the Wirral Hospital and Dispensary for Sick Children.*

	Under 1 yearold.	1 to 2 years.	2 to 3 years.	3 to 4 years.	4 to 5 years.	5 to 6~ years.	6 to 7 years.
Convulsions or fits ...	9*	6	3	2	...	...	1†
Spinal curvature, with or without paralysis ...	1	3	2	6	3	5	2
Inability to walk, or paralysis of a limb ...	...	2	1	4‡	...	...	3§
Hydrocephalus ...	3	4	...	...	2	...	...
Cerebral congestion, cerebral, and cephalalgia ...	2	1	...	1	1	...	1
Chorea ...	...	...	...	...	1	...	...
Epilepsy ...	...	...	...	...	1	2	3
Nervous cough ...	...	...	2	3	...	2	...

Here are tabulated 82 cases treated for nervous affections among a total of over 5700.

\* In one of these cases the convulsions were caused by fungus cerebri.

† This case was one of compound fracture of the skull.

‡ In one of these paralysis was due to chronic spinal meningitis.

§ In one of these paralysis followed a severe attack of scarlatina.

## A CRITICISM OF ESMARCH'S ELASTIC COMPRESSION.

FOUNDED UPON AN EXPERIENCE CHIEFLY OF  
AMPUTATIONS.

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THE subject of the present notice is a method of arterial compression which has for the last year or more been known in connection with the name of Professor Esmarch, of Kiel. The astounding simplicity of the means employed is such that on first hearing of it one might easily think or say, "Why has this idea not long ago occurred to me?" or, "Why have tourniquets been invented and so long used if the same end is to be better attained in this manner?" In what manner? By wrapping a piece of stout india-rubber cord or tubing a few times tightly round a limb. No blood passes the point compressed in either direction, as any one may see proved whenever the method is tried; but some have been puzzled to know why the circulation is not carried past through the bone, for surely this is not compressed. The explanation of this curious fact, which may at first seem almost a paradox, seems to be a purely anatomical one; for the long bones are supplied by two sets of vessels, the medullary for the marrow, and the periosteal for the bone proper. The medullary artery and vein pass to and from the interior of the cylinder through a single hole, being distributed to the marrow; while the bony cylinder itself has a vascular network continuous with that of the periosteum, which is compressed with all the other soft tissues round the bone, in which latter the circulation is consequently

arrested. The whole method includes (1) elastic compression, (2) bloodless operation, and (3) the conservation of the blood of a condemned limb in the system. The blood of condemned limbs has long ago been saved in certain cases, and bloodless operations can, of course, be performed with the aid of different means; every surgeon has wished for such in his time, and many have devised original means for attaining this end, all of which are but natural deductions from a knowledge of the physiology of circulation. In reference to the novelty or antiquity of the method I believe that "there is nothing new under the sun," and I hold that in surgical appliances and practice we need have nothing to do with the question of priority in the adoption of any means. The same invention is frequently made by different persons quite independently of one another, either simultaneously or at intervals of time.

The credit of originality is still the same, but the question of mere priority is one purely of circumstances, and, I take it, of no scientific importance.

I have seen a bloodless state of a wound perfectly achieved in some cases by elevating the limb, and then putting on one of the tourniquets in common use. Nay, I have seen it attained by simple manipulation from beginning to end, the limb being squeezed and rubbed in an elevated position until most of the blood was returned into the body; and then compression practised, in great perfection, with the hands, to the great comfort of the surgeon and the advantage of the patient, but at the expense of infinite trouble and an agony of fatigue to the compressor.

But by far the most efficient way is to bandage the limb tightly with an elastic roller from its distal end to a point above the seat of operation, and then to apply such compression as shall not permit a drop of blood to return; and this is most easily, efficiently, and harmlessly done with an india-rubber cord or tube wrapped several times round the limb, after which the elastic bandage is removed.

In many amputations and other operations it matters little either to the surgeon or to the patient whether a few ounces of blood, more or less, be lost, so that there is not an urgent demand

for bloodless operations as a rule. But there is the great class of cases in which either the patient cannot afford to part with blood without injury to his health, or the surgeon requires a bloodless state of the wound for the purpose of operative accuracy. To give but one instance. Every now and then a tumour attached to a nerve-sheath is met with, and I have known a limb to be amputated for this disease, when, by a bloodless operation, the tumour could have been removed by an easy dissection, or at least an attempt made before resorting to the extreme measure.

Again, in every amputation, and in many other operations on the limbs, arterial compression is necessary, and cannot be better done than with the elastic cord or tube, while in that not inconsiderable class of cases where assistance is scanty the advantage to the surgeon is incalculable, because every vessel of consequence can generally be easily seen and leisurely closed by the operator, quite unassisted, and in the absence of hæmorrhage, for the simple reason that the compression is perfect; it is also more easily applied, as the careful adjustment required in the use of a tourniquet is here dispensed with.

There are surgeons, however, who make much of the free oozing which sometimes occurs when the compressing cord is loosened, and which does not always spontaneously cease within the few minutes grudged by no one to this process. This is a point which I have not overlooked in the observation of the cases I have been permitted to witness, as is that of the influence exercised (as far as can be ascertained) upon the process of union in the wounds made under this method.

I have not seen any oozing of blood, under these circumstances, which was troublesome to the surgeon or detrimental to the patient; nor have I found any characteristics of the healing part which could be attributed to the peculiar method adopted, or which, in fact, differed from those of healing wounds not previously subjected to Esmarch's plan. On inquiry, I find that up to the writing of this paper the number of operations performed by nine different surgeons in Liverpool under the method in question is only about twenty-seven, of which I have been present at sixteen, and performed seven myself.

The method of Esmarch, then, is remarkable in attaining the old and pretty well-known purpose of bloodless operation by the simple and easy means of elastic compression; and it is perhaps owing to this simplicity of means that surgeons have largely adopted, published, and discussed the method.

As far as the literature and practice of the present epoch are concerned the compression by elastic cord is so far new that, whereas a year or two ago it was all but unknown, every one has now heard of it, many have seen it done, and not a few have employed it; and the performance of bloodless operations has, through the use of the particular method of compression, obtained a notoriety which, in comparison with its scanty adoption previously, amounts to a practical novelty.

I shall directly refer chiefly to my own major amputations, performed during a period of nine months; the other cases having served to enlarge the basis of my experience in this matter.

The first case was an amputation in the middle of the thigh of a middle-aged man whose knee-joint was inflamed and open, and who had an excessively bad bed-sore, and from whom it was important not to take any blood if possible. The details of this case have already appeared in the 'Lancet,' so I will only quote in abstract. The blood in that portion of the limb which was to be removed was first returned to him by the tight application of an elastic bandage. Less than half an ounce of blood was lost, and the amount of oozing after operation was obviously slight.

The second case was the removal of a lacerated hand, a recent machine accident, by amputation in the forearm of a lad. Here no blood was returned into the arm, and the elastic cord was simply used for purposes of compression. It is right to mention that although he went to Wales in a month, another month elapsed before absolute healing took place, in consequence of a minute crumb of necrosis, on the separation of which the open point healed in two days or less. The cause of this minute necrosis, and so great delay in complete healing, was, I am satisfied, due to a slight retention of pus at an early stage of the dressing. The oozing of blood immediately after this operation was no doubt a little free, but was subdued at once by exposure and cold and did

not matter in the least, though very probably a consequence of the tight compression.

In a third case amputation was performed at the knee in a child of four, for inflammation of the joint, no other treatment being considered practicable.

Here, too, hardly a drop of blood was taken away, and the method answered perfectly.

A fourth case was an amputation at the hip-joint, in a boy of six, emaciated to a degree, with a thigh riddled with sinuses, and a hip-joint that had been excised by me four months previously.

The pulse was over 140 and excessively feeble, and the only escape from close-impending death lay through amputation. This was done at the end of November, 1874, after first returning into the body the blood of the condemned limb by elastic bandaging. A pad was placed over the situation of the external iliac artery, and the india-rubber cord wound from the perineum round the groin and buttock, embracing the corner of the pelvis, and being held up on the outer side by being looped over a bandage that encircled the hips.

I have had made for similar cases in future a belt consisting of stout webbing, provided with a buckle, and having attached to it a couple of iron hooks, over which the elastic cord may be passed on the outer side of the hip.

In this last case only a drachm or two of blood escaped before the cord was loosened, and after all visible arteries were tied. After the cord was set free a good number, much dilated, had to be secured; but under an ounce of blood was lost in all. It was here a matter of life and death to preserve the blood, and after a couple of days' prostration, with a pulse of over 160 and scarcely to be felt, the boy began to recover and speedily gained flesh. Not only was he freed from the great pain of this limb, but the acquisition of the blood returned into his body amounted to a positive transfusion from and to his own person. The oozing of blood during the first four or five hours was not more than is usual under any method.

The elastic cord may also be used for amputation at or near

the shoulder, as Esmarch himself has pointed out, and as I have proved while assisting at such an operation. That instance was a good illustration of a case where it was not safe to return the blood of the condemned limb into the body, as there was thought to be phlebitis of a large vein, so the cord was simply placed high up above this from the axilla round the neck and spine of the scapula. It answered perfectly, not a drachm of blood being lost. When phlebitis is known to exist in the part to be operated on it would never do, I think, to squeeze back forcibly the blood from the part concerned for fear of detaching thrombi, which might extend or become emboli; but if even in this case it be important to save blood, the limb may be highly elevated for a few minutes (according to the well-known practice before referred to) before putting on the cord.

Again, even in amputations accompanied at first by loss of blood, under such compression the wound speedily assumes a bloodless state.

A case of amputation at the hip-joint was reported some months ago in one of the journals, and here the blood was returned from the limb and Esmarch's compression used, the elastic cord being applied round the body over a pad on the abdominal aorta. This would, no doubt, be always feasible; but I consider compression of the external iliac for such a purpose far preferable when practicable, in order to avoid such a serious obstacle to respiration as confinement of the abdominal muscles in such a powerful grasp. In operations of such a magnitude the patient is often previously reduced to the lowest point of viability, so much so that both circulation and respiration require every advantage that can be given to them, as in my case just quoted.

This point was clearly illustrated at an operation of Mr. Bickersteth's in the Infirmary in November last, the patient having had serious hæmorrhage from the upper part of the thigh. In the operation of cutting down to look for the bleeding point it became important to remove an abdominal tourniquet which had been placed on the aorta, but which seriously impeded the respirations of a man reduced by hæmorrhage, fever, and shock, almost to his last gasp. I merely mention this in allusion to the

inadvisability of employing abdominal compression in some cases of great prostration, if it can be avoided.

In conclusion, then, having been concerned in practically testing this method from the day, as I suppose, of its introduction into Liverpool, up to the present—a period of about twelve months—I have thought it not unfitting to publish the results of that experience, which, though not extensive, is sufficient to enable an opinion to be formed. Though I have never yet seen or heard of any harm directly or indirectly resulting from the employment of the method, I do not wish to be regarded as a mere advocate of the plan. So far as I have gone in the matter the present criticism embodies the opinion I have of a subject the general adoption or rejection of which is to me a matter of perfect unconcern, but which I have tried to regard with impartiality, and to which I hope to give further attention. I shall be very glad to publish objections to the system when I have found them to be greater than they appear to me at present.



## ON EXCISION OF THE OS CALCIS.

By EDWARD LUND, F.R.C.S.,

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THE entire excision of the bone of the heel, or the resection of the os calcis, as it is technically termed, is an operation of rare occurrence, and one which must at all times be interesting to the practical surgeon. If we take as our motto in the practice of our art that "every operation is an opprobrium on surgery," or even admit that every operation in which we mutilate the body may deserve that appellation, it must ever be the pleasing duty of the surgeon to endeavour to save as much of a limb as may be possible consistently with the healthy functions of the parts remaining. It would be difficult to enumerate all the various forms of operations which have been devised for the human foot, to save even a small portion of that exquisite mechanism by which the weight of the body is supported and elasticity is secured. Some operations have been performed upon the anterior part only, upon the phalanges and the metatarsal joints, while others have been directed to the removal of those bones which constitute the true tarsus and arch of the foot. Here we have had, as I have myself observed, cases of removal of the entire astragalus, in which afterwards a useful and serviceable foot has been preserved. It is said also that the cuboid has been completely resected; and on many occasions so large a portion of one of the three cuneiform bones has been taken away, that if the whole of the bone has not been extracted at the time of the operation, the spicula, which have afterwards exfoliated, have accomplished its entire removal. But the os calcis, by which, in the erect position of the body, so large an

amount of weight is sustained, is a part of the foot to which the surgeon rarely has the opportunity of directing his exclusive attention; inasmuch as it is found that the cases in which the os calcis only of the tarsal bones is the one diseased, are very rare. Yet I think from the cases I have noted that when once the os calcis becomes subject to disease as a consequence of accident, as, for example, after injury produced by a sudden blow or fall upon the heel, the disease will remain in that bone, and not travel on to the neighbouring bones, for a longer time than we might at first expect; and in many cases of disease of the posterior part of the foot, where sinuses are directed towards the os calcis, the presumptive evidence, I think, will be that the bone spoken of alone is the one affected. Not so if we consider the changes which might go on under similar circumstances in the astragalus. Here we seldom have disease of long continuance without the lower portion of the bones of the leg participating in the same action, and this will lead to the large and important joint of the ankle being quickly damaged.

I have lately had three cases of disease of the os calcis in which I have performed the operation for the removal of the entire bone, and with such success as to lead me to publish them in these 'Reports.' They have all occurred within the last eighteen months, the first being in a young man under twenty years of age. He had had an abscess and sinuses in the neighbourhood of the heel, chiefly on the underpart, for more than twelve months, and had injured the foot by a fall some time previous to this. He was of a delicate, somewhat strumous, diathesis, but when first admitted into the Infirmary did not present any other distinctly constitutional indications. After the operation had been performed, and when the recovery seemed almost complete, symptoms of disease in the left lung showed themselves. He went back to the country with an irritating cough, and this, I heard afterwards, increased. Hæmoptysis set in, and although I have not heard of the case for many months (and, unfortunately, I do not know the address), I fear it has passed into one of acute pulmonary decay.

The second case was that of a woman, aged about 35 years,

who had suffered from sinuses and diseased bone in the neighbourhood of the os calcis for more than twelve years. During the early part of that time, when under the care of the late Mr. Beever, she had a great quantity of dead bone removed by gouging, and for five or six years the parts remained healed and sound. About three years before her last admission into the hospital the inflammation had returned, fresh abscesses and sinuses had formed, and it was doubtful whether or not the disease had extended beyond the bone in question. She underwent the operation I am about to speak of about eleven months since, and on examining the case within the last week I find she has a very serviceable foot and is able to walk with considerable ease. There is some stiffness in the ankle, as far as the movements of the astragalus in the tibio-tarsal joint are concerned, but this she says has been the case ever since the first attack of inflammation many years ago. She can now bear pressure upon the foot, and walks with but very slight appearance of lameness.

The third case is at present in the hospital. It is that of a boy, about 15 years of age, upon whom I operated on the 17th October last. The case at present bids fair to make a good recovery, for the wound discharges very slightly, and for the greater part of its extent is now healed, although, as I shall presently explain, from the great depth of the cavity whence the bone has to be removed, there must be constant demand for new matter to fill it up.

Now the remarks I am anxious to make have reference chiefly, if not entirely, to the particular mode of operating which I would advocate in this form of resection of bone. My colleague at the Infirmary, Mr. Southam, tells me he has had several cases of resection of the entire os calcis. One of them made an excellent recovery, and became a very useful nurse in our Infirmary, where she was always actively engaged in walking about, and her walking was quite as nimble and quick as if no such operation had been performed.

I am not aware how the other cases ultimately terminated, but I believe it was satisfactorily. I may here observe that it was while assisting Mr. Southam in two of his cases that my attention was

invited by him to a much more simple form of incision for the extraction of the os calcis than I think has been previously practised by surgeons; and I should wish to give Mr. Southam the credit of having originated the idea that so large a bone as the os calcis could be removed from the foot by a single incision, extending only over its external surface, or that which lies in relation with the outer ankle. But for the more particular details of this operation, and the exact directions which I am anxious to give to those who may wish to adopt this method of performing it, I would hold myself responsible, as in the three cases just referred to, and upon each occasion I have followed very exactly the same plan. If we refer to the text-books for the various modes of extracting the os calcis, I think we shall find that surgeons have been very liberal in their incisions, and have cut through structures in the foot which one would have thought would have been better not divided. In that excellent epitome of the history of operative surgery in relation to the human foot, which consists of a summary of lectures given by Prof. Hancock before the Royal College of Surgeons of England, the author has explained in detail, and almost in chronological order, the different modes of operating which surgeons have followed for this purpose. He mentions nearly forty cases of entire removal of the os calcis by British surgeons, all of which have been performed within a comparatively short period. The first operation dates as early as 1848, and was performed by himself; but with much credit he waives his claim to be the originator of the method, inasmuch as the case did not terminate favorably. But a similar operation, performed by Mr. Greenhow, of Newcastle, only a few months afterwards, having proved successful, with three others by the same surgeon, Mr. Hancock, with graceful generosity, has paid him the compliment of suggesting that in future this operation for resection of the entire os calcis shall be designated "Greenhow's operation." In reading the details of these different methods of proceeding it seemed to me that it would be possible to simplify the operation very considerably, and for this purpose I have followed the plan I now proceed to describe.

The incision which I make is commenced at the back of the foot, just on the internal side of the tendo Achillis, on a line with the middle of that part of the os calcis between which and the tendon the bursa is placed, so that the first portion of the incision being carried boldly down to the bone, this bursa is opened and the tendon set free. The incision is then carried round to the external side of the heel, and so directed that it shall pass along a line extending one third down from the tip of the external malleolus to the under-surface of the foot, with a slight inferior convexity, then carried on to the spot where we know the os calcis and the cuboid are in contact; and this, speaking roughly, will be at a point midway between the tip of the malleolus and the end of the prolonged extremity of the fifth metatarsal bone. In doing this it is well to remember the position of that little projecting tubercle of bone which, lying on the external surface of the os calcis, gives steadiness to the tendons of the peronei muscles, so that the incision may come just below this point, and thus, if possible, avoid wounding those tendons. The incision being carried down as here indicated, very little more division of structure by a sharp instrument is needful, for it will often occur that the periosteum of the os calcis is so loosely attached to the bone, by reason of previous inflammatory effusion, that it can be very easily detached. Should this, however, not be the case, here and there the tissues must be divided by the scalpel; otherwise I have found at this stage of the operation no instrument more useful than one of those bone scrapers or periosteum-knives which are used for detaching the hard palate from the bone in operations for fissure in the mouth, and which are sold in the case of instruments employed for that purpose by Mr. Annandale, of Edinburgh. Of course any convenient form of periosteum knife will serve the purpose. In this way I detach the soft structures first from the underpart and back of the os calcis and, if possible, I even carry the separation as far as its internal surface, so that after a little perseverance and time—and here I may remark that the operation for the removal of the entire os calcis must necessarily be a very tedious one—I am enabled to get the tuberosity of the os calcis to project through the wound by

slipping the lower flap well under the bone. The next step in the operation consists in the detachment of the os calcis from the under part of the astragalus, and here it is necessary to proceed upon the upper part of the wound, where, it will be noticed from its position, we have only to work over one third of the distance, and in doing this I take great care to detach the tendons of the peroneal muscles from the side of the bone without injury, which can be done if a sharp scalpel be not used. Having by a slight movement of the os calcis got a little guide to the joints between it and the astragalus, I find that by employing the "astragalus hook" which I have described in the 'British Medical Journal,' 19th October, 1872, much trouble is saved, for it is strong enough to act as a lever for separating the bones, and then, by bearing in mind the oblique direction of the calcaneo-astragaloid ligament, we can without difficulty cut through these fibres, and pull down the os calcis an appreciable distance from the astragalus. Having done this it only remains to separate the os calcis in front from its junction with the cuboid, and here, at first, there may be difficulty in discovering the position of the joint. In order that I may be able to move the os calcis freely, I take firm hold of it, not with the lion forceps of Sir W. Fergusson, which are often so useful in such operations, but with forceps such as are occasionally employed in amputations for the removal of any additional piece of bone from the stump. These are generally made of such a size that the blades fit very well upon the line of the tuberosity, and with the increased leverage thus obtained there is little difficulty in twisting the bone, and moving it about in such a way as to impart to the finger placed over the front part of the wound a sensation of movement between the os calcis and the cuboid. Here a few touches of the scalpel will divide the dorsal calcaneo-cuboid ligament, and as soon as sufficient space is obtained, the astragalus hook may be here introduced, and partly by leverage, and partly by its cutting action, it will set free the lower calcaneo-cuboid fibres and liberate that portion of the bone. A few portions of fibrous tissue will generally remain lying to the front and the internal side of the os calcis. These have often given me

much trouble for their complete division, yet I have found that the astragalus hook has here again served me well. To use it is safe, for it cuts through the tissues partly by laceration, which helps in some degree to restrain the hæmorrhage, and it can also be used as a lever with considerable force, and yet each incision made by it is short and limited. It will be seen in this way that the os calcis can be entirely extracted; and provided that in all the incisions which are made during the operation, the instrument (whatever it may be which we employ) is kept close to the bone, no structures of any great importance can be divided, and in none of the three operations which I have performed has the patient complained of any symptoms of nervous pain which might lead me to think that any large branch of the plantar nerves had been injured. With regard to the vessels, the hæmorrhage has on no occasion been excessive; in my last operation a branch from the back of the external plantar artery bled very freely, but the flow was easily stopped by torsion. No doubt it was one of those running backwards as a calcanean branch. As soon as the os calcis has been thus got out it becomes our duty to ascertain, either by the finger, or by ocular examination, what may be the condition of the under-surface of the astragalus and of the posterior surface of the cuboid. Here, if the cartilages are roughened or destroyed, or if the bone should appear to be softened (as occurred in one of the three cases I have mentioned) it will be right to gouge away, or by some other method remove, all the softened bone we can get hold of. And supposing the diagnosis to be correct as far as the movements of the ankle are concerned, and the condition of the internal border of the foot, it may be assumed that no other bones will require to be interfered with.

As regards the after-treatment of these cases, I must here repeat what I have so often had occasion to state in previous papers in these Reports, that each case has been conducted as strictly as possible on the antiseptic system. But in reference to this plan there are a few points upon which I deem it well to offer some observations. In the first place, I have observed in this operation especially, and in most operations upon the foot,

that the antiseptic system seems to be here less successful as far as entire avoidance of putrefaction is concerned than in almost any other part of the body. Why this should be so is rather difficult to say; but I believe it is partly due to the fact that serum and sero-pus when secreted at this distant portion of the body, far away from the centres of the circulation and the nervous system, have in some way less resisting vital power, and are disposed to undergo more rapid decomposition: or else it may be that, in each of these three cases, there had been for a lengthened period before the operation, old diseased bone and old sinuses in the soft tissues in which fœtor had remained for several days notwithstanding my adoption of Prof. Lister's plan of injecting these sinuses freely with a strong solution (forty grains to the ounce) of chloride of zinc immediately before beginning to operate, so as if possible to destroy absolutely all present putrefaction, and start, as it were, afresh upon healthy tissue. The only means by which I think it might be prevented in any future case would be, first of all, to take care as soon as the bone is removed, to bring the edges of the incision somewhat in contact, drawing up the depressed flap from the sole of the foot, and making the cavity from which the bone has been removed as complete as possible; then to fill the cavity with a strong watery solution of carbolic acid, allowing it to remain there for a few minutes, and then repeating this process for two or three times in succession. This is an excellent method of cleansing recent wounds of a deep figure, since by reason of the wound being filled with the lotion, there is the best possible chance of the surrounding tissue becoming thoroughly saturated with it. The other method, which I have already tried in similarly deep wounds with much benefit, though not with complete success, and which is certainly meritorious, is to stuff the wound with strips of cere-cloth or antiseptic gauze dipped in a solution of glycerine and carbolic acid (one part in ten), so as to supply useful pressure that shall arrest the oozing from the smaller vessels, and also act as a good receptacle and absorbing medium in which the blood can soak, and be protected from putrefactive change. In fact, it is now my constant practice in all operations conducted upon



the antiseptic principle, to cover the wound immediately after the operation, with six or eight folds of cere-cloth steeped in this carbolic glycerine. I find that the blood which oozes from such wounds falls into the cere-cloth so prepared, and mingling quickly with the glycerine forms an impervious covering to the wound, from which, when first dressed, it can be easily removed. As to the necessity for using the india-rubber drain-tube in these cases, if I have employed strips of cere-cloth and glycerine to project beyond the centre of the wound, and to be removed on the second day after the operation, I find they leave sufficient outlet for all future secretions, providing the patient can be persuaded to keep the foot and leg resting on the bed entirely on the external side, in which case the drain will be perfect, and there will be no serious accumulation within the cavity. I generally use about four or five sutures at the time of the operation, introducing them from each angle of the wound nearly up to the centre, and leaving a portion in the middle unclosed, through which, as I have said, the strips of cere-cloth are to be drawn. As the cure advances to completion the surgeon will often notice that the lower edge of the incision has a great tendency to become inverted and drawn in beneath the upper edge. This, in my second case—that of the woman who made so good a recovery, gave me some anxiety, for I thought it would spoil the ultimate result by making the heel smaller and flatter. But I found that gradually this inversion of the edge subsided, and at last without any special interference it became placed opposite the other portion. In none of the three cases have I yet had any complications in the way of abscesses at a distance from the wound, or inflammation along the line of the tendons, and I attribute this entirely to the careful employment of antiseptic measures.

In the case of the woman just referred to there is only one thing to note, namely, that she experiences a great tendency to involuntary inversion of the foot unless she takes great care while walking to place it firmly and flatly upon the ground. I have no doubt the real cause of this is that the peroneal muscles having lost one of their fixed points of traction, viz. the bony tubercle on

the os calcis, although the longer of the two tendons may still play through the groove in the cuboid,—their combined action on the external border of the foot, and the power which that one possesses of drawing down the internal as well as raising the external border of the foot, the tibial muscles, especially the *tibialis anticus*, will be unbalanced, and the internal side of the foot thus become lifted too much upwards, will be drawn also slightly backwards. This will account for the somewhat shortened appearance of the foot which has been observed to occur after removal of the os calcis. Of course the heel must be flattened, and there must be to some degree a diminution in the actual length of the leg; yet with all this, as we see so constantly in slight loss of length of limb after fractures and other injuries, the patient can with very little effort accommodate himself to the change of proportions, and while watching him in the act of walking, the inattentive observer would scarcely perceive any difference in length.

As I said at the commencement of this paper, my chief object has been to introduce to the profession a particular mode of incision, and a special method of proceeding in the removal of the os calcis I desire also to put on record another illustration of the beneficial results which in such cases may be secured by careful after-treatment. It must ever be remembered, however, that before such an operation is attempted, the surgeon should satisfy himself that other less serious steps might not have been taken; viz., partial excision, or, at least, repeated efforts to remove diseased bone, by the use of the gouge or of the osteotome. And beyond even these precautions we must not forget that a judicious selection of cases will always have more to do with results, and doubtless has always had more influence in regulating the statistics of successful operations, than any careless or blind adherence to the presumed necessity for special treatment in special cases.

## A NOTE ON THE SO-CALLED PSORIASIS PALMARIS.

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THE very facilities for observation afforded by skin eruptions have to some extent impeded their correct appreciation; the symptoms being recognisable by the eye alone, making no obvious call upon the reasoning faculties, lend themselves easily to the pernicious habit of artificial or scholastic classification. And hence diseases presenting similar objective features place the observer in much the same position as a schoolmaster who has been entrusted with twins: 1st, he thinks they are both absolutely alike; 2nd, when he sees them apart he mistakes one for the other; 3rdly, he becomes doubtful if there is even a family likeness between them.

Willan's classification was founded on the discrimination of the various elementary lesions of the skin without any especial reference to the pathological processes actually at work. Diseases producing scales belonged to squamæ, and as the palm and sole were seen to be subject to an eruption accompanied by scales, it only required the slight exercise of the process of exclusion to fit the name psoriasis on to the eruption in question; and though modern research has advanced enormously our knowledge of essential pathological facts, so that we can properly subordinate what is accidental or consequent, yet the name bestowed in error is still familiar in our mouths, and serves, I think, to perpetuate a mistaken view of the diseases now under consideration.

Psoriasis of the palm is extraordinarily rare, though the affec-

tions passing under the name are of frequent occurrence. I have watched inveterate cases of psoriasis for months together, seen the disease extend its limits to the very edge of the palm and there stop, but I have never seen it invade the flexure surface of the hand.

The essential characteristic of psoriasis is the hyperproduction of epidermic scales. This takes place in all stages of the disease, when it is spread over large tracts of skin, and when it shows in papules no bigger than a pin's head, when the corium is thickened by reiterated chronic attacks, and when the patches are recent and almost level with the surrounding skin. The uppermost scales are thrust away from the subjacent layer of epidermis by the growth of new scales, so that, when we examine a case of psoriasis in its primary condition, we find little heaps of epidermic scales, silvery white in colour, and, if carefully detached, having half formed scales as their basis; if these (as generally happens) are detached we find a raw surface which bleeds but does not exude other fluid. As regards the deeper changes (though much remains uncertain) it seems to be ascertained that the disease affects the superficial portion of the corium, especially the papillary layer, that in consequence of greatly increased cell proliferation the papillæ are hypertrophied and the circulation in them very stagnant. But if we now examine a patch of squamous eczema in a similar manner, we find in the first place that the primary condition of the affection is not one of scaliness but of exudation, more or less gradual, in the superficial layers of the corium, and beneath the horny layer of the epidermis; this exudation is accompanied by increased cell-growth and migration, as in inflammation of other tissues. In chronic cases the deeper portions of the skin become infiltrated, and the epidermis is formed at a greater rate but with less perfection than in health. Hence scales are formed, but only in chronic cases, and only so much in excess of the natural rate of epidermis growth as is justified by the increased activity of the skin and efforts made to repair loss. So that we have in one disease an essential primary condition of scaliness, in the other a secondary increased growth of epidermis; the one disease is essentially dry,

the other essentially moist; the prime feature of one is cell-growth, of the other soakage of the tissues; the one in its most typical form approaches the character of a new growth, the other of an inflammation.

Now, if we examine cases of the so-called psoriasis palmaris we are able to note, first, that the scales are not new formations, but the desquamation is caused by broken and partially detached epidermis, the shreds if removed renew themselves but slowly, and on lifting them from their bed an unsuspected oozing is frequently to be found. We must also take into consideration that sufferers from psoriasis palmaris do not suffer from psoriasis in other parts of the body, the main selective seats, elbows and knees, remaining unaffected; and also that the victims of general psoriasis—a most obstinate, spreading, and recurrent disorder—have almost, if not quite, invariably unaffected palms and soles. But, on the other hand, we find eczematous subjects suffering from the condition generally termed psoriasis palmaris. A healthy-looking, but nervous, woman was sent to me with both hands and forearms covered with a severe vesiculo-pustular eruption of some months' duration. In front of the neck, and stretching upwards towards the ears, was a well-marked patch of eczema. There was no evidence of scabies or of syphilis. I took the precaution of examining the elbows and knees and inquiring as to previous skin complaints, but found no reason to suppose the patient had ever been a sufferer from psoriasis. By appropriate treatment the disease was mitigated, and the skin became everywhere smooth and healthy except the palms of the hands and the finger-nails. The centre of the palm first healed, but the eminences remained for weeks red, thickened, fissured, and in the ordinary sense of the word scaly. The appearances, in short, were those of the so-called psoriasis palmaris perfectly displayed, and by no means easy to distinguish from the similar affection due to syphilis. Now, if the patient had only been seen in the latter stage of the attack it might pass for a typical case of psoriasis palmaris; the previous history shows it to be really the fag end of an attack of eczema.

Few diseases of the skin better repay treatment and attention

to details of management, few are more hopeless if left to "nature" or treated on wrong principles.

The following case may serve as an example :—A gentleman in easy circumstances, but of a nervous anxious disposition, came under my care. He had been subject to the disease for many years, in the right hand especially, which at his first visit had the epidermis of the palm and portions of anterior surface of fingers torn, broken, and fissured in all directions, the subjacent skin being inflamed and thickened; nowhere would the scales scrape off in silvery flakes, no sensibly moist exudation was visible. The scales were constituted by shreds of epidermis, detached at their circumference, but attached by their centres. He had been under many practitioners, who seem to have had a suspicion of syphilis—a suspicion not confirmed to my mind by investigation either of objective symptoms or the patient's history. Taking into consideration the bilateralism of the disease, its recurrent nature, and the nervous type of the patient, I placed him at once on six minims of Fowler and half a drachm of liquor potassæ, and ordered him to rub in an ointment composed of seven parts zinc and one mercurial. I may mention that mercury was not used antisyphilitically, but in accordance with my usual local treatment of chronic exudative diseases accompanied by much thickening. In three weeks the physiological effects of arsenic were beginning to show themselves, the infiltration of the skin much reduced. The medicine was diminished to one half, and a weak preparation of oil of cade rubbed into the part affected. In five weeks a slight pinkiness of the palm and an imperfect line of desquamation along the ulnar margin of the hand were the only evidences of the disease left. He considered himself cured. This case yielded much more readily than usual to treatment, owing probably to the fact that the patient was in sufficiently easy circumstances to keep his hand at rest till the cure had commenced. It is far otherwise with workmen who cannot forego the use of their hand. Like eczema in other parts of the body it is much influenced by external irritation. I have almost always one or two workmen in attendance at the dispensary; they derive benefit from the use of ointment, but are practically

incurable—unless on strike. In a less degree this applies to patients of all classes, and it is a useful practical fact to remember that if a case is more than usually obstinate, and there is no mistake in the diagnosis as regards syphilis, some external source of irritation is probably at work. And here we see the importance therapeutically of regarding this affection as eczema rather than psoriasis. The latter disorder is one produced by causes acting from within; external irritation seems to play no part in its production, nor has it been experimentally imitated. On the other hand, eczema is especially determined by external agencies and easily produced experimentally. Hence, although the local treatment of psoriasis is very like the treatment of chronic eczema in principle it must differ in degree. The somewhat rough and severe handling which is often the only mode of removing chronic psoriasis is in itself sufficient to maintain or even to increase the violence of an eczematous attack.

The main points to be attended to in the treatment are obvious, but I may, perhaps, briefly glance at them.

The hand must be kept at rest, the employment of tools, driving, fingering samples, and so forth, absolutely forbidden. The horny layer of the epidermis is thicker and less porous than in other parts, and should be softened by prolonged packing with wet compresses, solutions of potassa fusa, soft soap, or borax, according to the severity of the case. Except while these are being applied the palm should be kept thoroughly anointed with grease; if there is much infiltration and thickening of the corium an ointment containing mercury should be employed—weak citrine, the mercurial ointment one to seven or six, or the oleate of mercury, full strength. When the inflamed patches are very indolent I think the best results are got with the iodide of sulphur ointment rubbed in frequently. Any spots resisting the action of these remedies should be lightly touched with the acid nitrate of mercury so as to produce a raw surface. The case will be completed as in chronic eczema of other parts by stimulation with tar, the oil of cade being the nicest preparation. Some discrimination is required in apportioning the amount of soothing or stimulating treatment necessary in any given case, but as a

general rule a case that remains stationary under soothing applications requires a stimulant.

As regards the general treatment: bilateral recurrent chronic cases are favorably influenced by arsenic; it should be given in full doses aided by an alkali, or if intestinal irritation is easily set up guarded with a little bismuth and tiny doses of opium. The patients will frequently be found suffering from some error of assimilation or excretion tending to produce that condition of debility most favorable to the onset of eczema.

The habit of counteracting with alcohol the torpidity induced by a sedentary life is often a great obstacle to success. The patients obstinately refuse to believe they can maintain their strength without stimulants, or that they take more than is absolutely necessary for their well-being. A glass or two of wine at dinner does no harm—may possibly do good by aiding digestion, but beer and spirits and drinking between meals should be forbidden. No other dieting is, as a rule, necessary.

The so-called syphilitic psoriasis palmaris, it may be remarked, is not a form of psoriasis at all, but the tubercular or lenticular syphilide modified by the peculiarities of the portion of skin attacked. It derives its importance as indicating a strong dose of the poison, and demands thorough uncompromising antisymphilitic treatment not only for its own sake but for the future. The patients are, as a rule, robust, and do not belong to the class of subjects in whom the destructive inflammatory lesions, such as rupia, ecthyma, suppurative iritis, &c., are noted, the difference being that in one case the severity of the attack is probably due to the amount or intensity of the inoculation, in the other to the indisposition of the attacked tissues to maintain an adhesive inflammatory action.

It often lingers after all other cutaneous manifestations of the taint have ceased, and patients who have suffered from it, no matter how good their apparent health may be, should be emphatically warned of a stage of relapses following that of latency, and especially prohibited from marrying for a lengthened period. I have memoranda of two cases which came under my care for this particular manifestation, in whom, after a period of latency, slight



cerebral symptoms appeared with double neuro-retinitis, requiring, of course, most active treatment. It appears to me that this local disorder always indicates a persistence of the syphilitic taint far greater than would be supposed from the amount of accompanying secondary symptoms, and this little practical fact becomes of great prognostic value, enabling us to predict with tolerable certainty an attack of great chronicity, strongly inclined to recur after long intervals of latency, and requiring steady mercurial treatment for its eradication.

## THE DURATION OF THE INFLUENCE OF MEDICINES, ETC.

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No one can have examined Dr. Jahr's book on 'Materia Medica' without being struck with the short notice, "Duration of Action," thirty, forty, or fifty days, and when I saw that a duration of about six weeks (I am quoting from memory) was attributed to the action of a single dose of "calx carbonica," "graphite," and some other substances commonly thought to be inert, my attention was roused to such an extent that for the last fifteen years I have never ceased to make such observations as would tend to elucidate the truth on this point. Reason soon demonstrated how absurd it was to believe that a gourmand who swallowed an oyster from its shell, or an artist who touched the tip of his blacklead pencil to cause it to make a darker stroke, could be under the medicinal influence of the so-called drugs for the space of a month. Experience showed that a man who took a dose of opium felt its influence in a few minutes and ceased to be affected by it in a day. But medicines have been repeatedly compared to poisons, and many that the physician employs in small doses are used by the murderer in large, *e. g.*, arsenic, opium, antimony.

Furthermore, certain diseases are commonly believed to have what is called a poison origin, such as measles, scarlatina, small-pox, typhus, clap, dysentery, yaws, influenza, and the like, and all these have a tenure differing amongst each other, yet moderately regular amongst each. A patient with measles gets well in a certain number of days; another with clap requires a certain number of weeks. A man bitten by a poisonous snake is dead

or well again in a day, while another bitten by a poisonous dog is not affected in any way for six weeks. The mosquito, bug, wasp, and hornet affect man instantaneously, whereas the tszetse (a peculiar African insect pest) does not affect the horse at all, and it only affects the ox long after the last has been bitten. It is then perfectly clear that the duration of the influence of foreign substances over the human body is by no means a constant quantity, and if it be variable it behoves us to investigate it to the utmost of our power.

Many considerations should induce us to do so, yet singularly enough no investigation on this point has hitherto been systematically carried out by allopathic writers. On the one hand we find traditions of poisons which lie in the system for days, weeks, or months, before they operate, and on the other we have drugs so potent that their effect seems instantaneous. Vaccination produces its effects in a week; its influence often remains for life. Syphilis does the same, while the influence of ergot of rye on a parturient female is over in half an hour.

The importance of the investigation is enforced by certain phenomena of disease. Clap, for example, is a disease arising from the persistent action of a poison (as some believe); it has, therefore, to be counteracted by the persistent action of a remedy (if any can be found); the same may be said of syphilis and some few other poisons, *e.g.*, lead, and mercury. The remedy has, therefore, not only to be selected but to be administered in such a manner that its influence shall not be intermitting. To use a homely illustration of our meaning: food is the material which counteracts death by hunger, but it will be of small utility if only administered in the form of a banquet once a fortnight.

This example helps us to another complication, viz. that food is taken for the sake of comfort as well as to preserve life, and we may add that the majority of eaters enjoy it as a luxury. Consequently we have to study the *dulce* as well as the *utile*.

This short preface has, we presume, sufficed to show that materials influence the body in various ways. We may now add that the same material does not influence all animals in the same way. If the mongoose were affected by the cobra in the same

proportionate manner as other animals, we cannot understand how it could go to seek (as it is said to do) a tree whose leaves would cure it. A rabid dog influences by his bite a sheep and horse sooner than he does a man, and a pregnant woman resists for days that ergotine influence which a parturient female acknowledges at once. We draw therefore the deduction that the subject under consideration has to be considered in details rather than on general principles. Yet experience has forced us to the conclusion that there is little real difference in these details. Of course it will be understood that it is impossible for any writer to investigate the whole of the 'Materia Medica' with a view to ascertain their actual merits under all possible circumstances. I cannot therefore pretend to do anything more than enunciate the conclusions I have formed respecting a few drugs in general use. Let us begin with various articles of food which richly deserve the title of medicines, and are frequently the sole means employed by the physician to restore his patient to health.

Arrowroot or other farinaceous aliments when made with water, as usual, do not act as food for longer than about half an hour, nor can we wonder, for if we see the real amount of solid which suffices to make the mixture gelatinous, we find that it does not equal the amount found in a single wine biscuit. If boiled with milk the duration of influence is about as long as the same amount of milk, with about half an hour added for the arrowroot and sugar. The addition of wine makes the effect a little more decided, but not more enduring.

Bread and milk under ordinary circumstances, when taken in a quantity equal to half a pint or pound, lasts for three hours or thereabouts.

A glass of pure milk with half an ounce of rum in it acts as food during two to three hours.

The feeding influence of an equal weight of tea and bread and butter lasts for about the same time.

The duration of an ordinary solid meal of meat and vegetables varies from four to six hours. If the quantity taken exceeds the average the influence is proportionally lasting.

The influence of wine varies with that used, and other circum-

stances; as a general rule the feeding effect of a glass of sherry is limited to half an hour.

A tumblerful of ale or porter solaces hunger for two or three hours, according to circumstances.

We will not speculate on the reasons why there is a variety in the satisfying power of certain foods, it suffices to have shown that such exist. In like manner certain medicines have more lasting influence than others. This is practically known to all observant physicians, who not only think it their duty to select a medicine but to prescribe the frequency of its use. Let us take a few familiar examples.

Chloroform inhaled in the ordinary manner operates in the course of a few minutes, and its effects cease a few minutes after its withdrawal; an almost constant inhalation, then, is required if we wish to produce an enduring effect.

Ergot of rye is another medicine whose effects are readily seen and which rapidly pass away. The accoucheur who administers a dose anticipates the result in less than ten minutes, and if he see none in fifteen or twenty minutes he repeats the dose.

The poisonous effect of prussic acid is seen almost instantaneously, and where recovery follows it seems to be complete in the course of half an hour.

On the other hand, the influence of strychnine in poisonous doses is delayed for some hours, and its action is evident for a day or even two.

Mercury ordinarily requires a long time ere the manifestations of its presence are seen, and a considerable period elapses after the drug is withdrawn before its effect ceases.

Lead operates in a similar manner.

Between these extremes there are many intermediate points.

Let us now bring forward a few practical observations which extended experience has enabled us to make.

The effect of a dose of quinine, say five grains, passes off in about four hours. If, therefore, we use it for the cure of ague three doses daily, or one very large one, are not sufficient. I have repeatedly seen intermittents cured by this drug given every four hours after it has failed completely when given at longer intervals.

In some few instances it is necessary to exhibit the drug at even shorter intervals. Neuralgia is another complaint in which the same medicine is frequently employed; finding it often fail, I adopted the plan suggested by the experience of ague and administered it with opium every four hours, and now I very rarely am disappointed. When used as an ordinary tonic its frequent use interferes with meal time and digestion, consequently two or three doses a day suffice.

I know of no tonic medicine whose immediate effects last longer than four hours.

Antimony as a nauseant operates in a few minutes, and this condition will remain for many hours. The influence of tobacco is of even longer duration. The nauseating effects of ipecacuan cease as soon as vomiting has been caused.

The influence of a single dose of iodide of potassium is felt within half an hour after its introduction into the stomach, but it lasts for two days.

The influence of turpentine (in  $\text{m} \times$  doses) in checking hæmorrhage is frequently immediate (I have known it check menorrhagia in less than a minute), and it lasts for twelve hours, consequently two doses in the twenty-four hours suffice.

The effects of croton oil as a purgative are immediate, but cease in the course of two or three hours. The phenomena attending the use of other aperients vary; generally they require eight hours ere they act, and then their primary action lasts for twelve hours and their secondary influence for four days.

The ethers and other diffusible stimuli act as excitants within a few minutes, but their influence on the system remains for, I think, three hours.

Digitalis operates tardily, and the duration of the effects produced last for about twelve hours after the discontinuance of the drug.

The influence of tincture of asafoetida, when the drug is administered for flatulent or spasmodic colic, is shown in a few minutes if it is shown at all, and if no effect is produced in half an hour it is generally useless to continue the medicine.

But as I am desirous of introducing to the reader other forms

of medicine besides simple drugs I will endeavour by an easy transition to pass from the domain of the physician through that of the surgeon to some farther ground which is common to both.

There are patients in hospital, as well as private practice, who come under the surgeon for "primary sores," and who subsequently reach the medical side of the infirmary for "secondaries." For a moment I will imagine that the applicant has a regular Hunterian chancre, hard as a bit of gristle, and nasty looking as a chronic ulcer of the leg. Mercury is ordered almost as a matter of course. The patient asks, or at least says to himself, "How soon will the medicine affect the disease?" Nor is the supposed query to be neglected, for unless the sufferer is taught to understand that there cannot, under any circumstances, be a decided change before the end of two weeks he will, as hundreds of patients have done ere now, take ten times the dose of the physic prescribed for him under the idea that he will get well ten times sooner. To such individuals I would say "You never must expect to see a daily change until about ten days have elapsed; then you may begin to measure the ulcer with a measuring paper. You may consider yourself lucky if by strict care you get well in a month."

The same or another patient comes with a face marked by "secondaries;" again mercury, in an appropriate dose, is ordered. At this point the clinical M.D. will tell "his following" how soon they may expect to see effects—a very slight diminution in colour in a week, decided improvement in a month.

The value of even the feeblest attempt at precision under such circumstances is that every failure compels both teacher and student to endeavour to correct the basis upon which the opinion propounded was formed.

Again, let us imagine that a patient has an ulcerated leg or an ulcerated throat, neither of which are of specific origin, and let me for a moment more indulge in the fancy that both are treated by my favourite application—laudanum in water, one part to three or four. The sufferer eagerly seeks to know how soon he may hope for a cure. His earnestness affects us, and in our

mental vision we see the results of prospective visits, and say "You will be all right in a month ; possibly the time may be six weeks." One knows that no medicine, whether used locally, generally, or both, will cure an ulcer in a day. When, therefore, there is any distinct lesion to be repaired it is necessary to form a definite opinion how long the system requires, under the most favorable circumstances, to do the work. The surgeon thoroughly understands this matter when he has to deal with a simple or a compound fracture. I cannot imagine that any one but a bone-setter would give a pill or plaster to cure a fractured ulna in a week.

As we have indicated that there are other means of cure besides drugs, we may recur to the matter now and speak of rest.

It is probable that every doctor in advanced life has a thorough appreciation of the inestimable value of the remedy—rest. But few have investigated the time required for its influence to be recognised, and for the continuance of repose necessary to cure the affection which excessive labour has brought on.

When a doctor consults a builder as to the length of time required for the construction of a new dwelling, the reparation of an old one, the alteration of a consulting-room, or the conversion of a hall into a patients' waiting-room, he expects that the architect will be able to give him a definite idea of the duration of the process of change and the probable cost. In like manner, when a layman consults a physician who counsels rest, he desires to have some definite idea of the extent of the demands to be made upon his patience and his purse. In direct proportion to the precision and correctness of the builder's estimate, we esteem him as a man of business, and in like manner a doctor is weighed in the balances.

What, then, we may ask, is the value of rest, and what its duration? To the weary traveller the duration of the influence of rest is about twelve hours. To a man whose brain is exhausted twelve days will give repose, and imminent insanity can only be staved off by unintermitted mental laziness of a year's duration. As the effects of one day's muscular exertion will in the delicate extend over a whole week, so to prevent those effects recurring,



more than a sennight is required. The duration of rest required to cure myalgia varies from six weeks to six months.

I have seen severe muscular pain produced by a day's over-exertion in a convalescent disappear in four days, but where a person has habitually done far more than is fit a far longer interval is required. This is the greatest in the consumptive and in the old. One patient who had lost four brothers and a mother from phthisis lay in bed six weeks ere he was cured of myalgia of the back from using a heavy hammer. Another, who came in for "angina pectoris," and had arcus senilis, was in hospital three months ere he recovered from pain in the abdominal muscles.

But rest alone will not cure "wasting palsy" nor always restore normal vigour to men who have given away to sexual excess.

If the expenditure of muscular or other vigour has been carried beyond a certain point, rest will not reinvigorate. Amaurosis from prolonged use of the eye is not cured by dark rooms, nor impotence by most perfect chastity.

It is, therefore, as we may didactically sum up, not necessary only for us to teach our young students, or any other man, to select a remedy, but to give the patient an idea what we desire the medicine to effect and the duration of time which will be required ere a repetition of that which we recommend will effect a cure. Everybody desires to obtain the confidence of his clients, and those will succeed most effectually who have just grounds for expressing their own confidence as to the probable time required to repair human damages.

**ON THE SENSE OF TASTE**  
**AND ITS**  
**RELATION TO FACIAL PARALYSIS AND ANÆSTHESIA.**

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Of all the special senses the sense of taste is the one which has received least attention, and appears to have excited least interest in the mind of students of nervous phenomena; yet there are many points in the physiology of this sense which are extremely interesting and curious, and its pathological modifications are by no means unimportant. Very recently Schiff, Prevost, and other physiologists have laboured to determine exactly the course of the nerves of taste from the tongue to the brain, and it is especially this point which we propose to discuss here. We shall relate the conclusions which these observers have arrived at by experiments on the lower animals, and we shall also examine how far certain morbid states of the nerves of the face throw light on the matter.

In discussing the sense of taste we must begin by excluding from consideration some sensations which are popularly included under that term. For example, we often speak of a rough or warm or mucilaginous taste, these being really common sensations, which the tongue, in common with other very sensitive parts of the body, readily perceives by its nerves of touch, &c. Again, we speak of aromatic, ethereal, putrid tastes, these being really sensations of smell, perceived by the nerves of smell at the back of the nostril. Moreover, we shall find it convenient also to exclude from present

consideration some true tastes which are of complicated character, such, for instance, as sour taste, salt taste; for the substances possessing these tastes, when brought in contact with the tongue, must give rise to a strong chemical action on the surface, which will affect the nerves of common sensation in the tongue in the same way as these irritants affect other sensitive surfaces, and so give rise to a complex sensation. It is better, therefore, to restrict our view to the simple typical tastes, sweet and bitter, and we shall thus be able to determine with greater accuracy the extent and arrangements of the organ of this special sense.

The peripheral organ of taste is placed in certain parts of the tongue and fauces. We commonly hear the palate spoken of as if it were an important seat of this sense, but it is only in a mechanical way that the palate is at all subservient to taste, the pressure of the tongue against it causing the sapid substances in the mouth to dissolve more rapidly, and bringing them into more close contact with the taste organ in the tongue. I have repeatedly satisfied myself by experiment that a bitter solution applied very carefully to the palate, so as not to run down to the fauces or back of the tongue, is not tasted. When we come to investigate in what parts of the tongue taste is situated, we find that it is limited to a very small area, namely, the anterior portion of the tongue, at its tip and sides, and the back part in the neighbourhood of the circumvallate papillæ, together with the adjoining surfaces of the pillars of the fauces. The under surface of the tongue and the greater extent of its dorsal surface possess no power of perceiving taste. We have thus two taste-areas, the front and the back of the tongue, and they differ, not only in situation, but also in nervous supply, and, to some extent, in function. The first—the anterior portion of the tongue at the tip and edges—is supplied by the lingual branch of the fifth nerve, the sensory nerve of the face; the other—the back of the tongue and the adjoining pillars of the fauces—is supplied by the glossopharyngeal nerve. It is now generally admitted that the terminal branches of both of these nerves receive impressions both of common sensation and of taste from their respective areas of distribution. Now, though both these taste-areas have the power

of perceiving both sweet and bitter tastes, they differ in this respect—the anterior area is much more sensitive to sweet tastes, and the posterior to bitter tastes. A simple experiment will easily satisfy any one of the correctness of this. It is for this reason that when we wish to enjoy the agreeable taste of a sweet substance we retain it in the front of the mouth, pressing it against the teeth with the tip and edges of the tongue while it gradually dissolves. When, on the contrary, we wish to enjoy an agreeable bitter fluid, as, for instance, some wines, we press it between the palate and the back of the tongue, thus bringing it into contact with the part which perceives bitter tastes best, at the same time forcing the aroma upwards towards the posterior nares.

I shall pass by the subject of the minute anatomy of the peripheral arrangements of the nerves of taste, and the peculiar taste-cones of Schwalbe and Lovén, which are found nowhere else but on the protected sides of the circumvallate papillæ and on some of the fungiform papillæ. A full description of these curious structures is to be obtained in Stricker's Histology.

We must now consider what are the nerves which transmit the sensations of taste from the tongue to the brain. No doubt exists as to the nerve of the posterior area. The glosso-pharyngeal, as already stated, is the nerve of taste for this part. It is distributed to the back part of the tongue, and to the adjoining portion of the fauces, and it appears to be to a slight extent a nerve of common sensation; its main function, however, is that of taste. Various observers record that dogs in which both glosso-pharyngeal nerves had been cut devoured food and milk mixed with colocynth without repugnance. I am not aware that the records of pathological anatomy contain any observations which throw light on the functions of the glosso-pharyngeal nerve. The cases of disease affecting this nerve mentioned by Longet are incomplete, so that reliable conclusions cannot be drawn from them.

When we come to the consideration of the nerves of taste of the anterior area of the tongue we enter on a field of great doubt and disputation. Two nerves pass to this part of the tongue—the hypoglossal or ninth nerve, the nerve of motion, and the lingual branch of the fifth nerve, which is the nerve of common sensation

for the anterior two thirds of the tongue.\* By many this is called the gustatory nerve, and it is generally considered to be a nerve of taste as well as of common sensation. Two difficulties, however, arise to prevent our accepting the fifth as a nerve of taste. One is that cases have been observed where complete anæsthesia of the fifth nerve has been present with loss of feeling in the face and tongue, but no loss of taste. Second, certain forms of paralysis of the portio dura of the seventh, or facial nerve, where the lesion exists above the point at which the chorda tympani branch leaves it to join the lingual branch of the fifth, have been observed to be accompanied by loss of taste in the anterior part of the tongue of the corresponding side; and this would lead to the opinion that it is not the lingual branch of the fifth itself, but the fibres which it receives by the chorda tympani from the seventh, that convey sensations of taste from this anterior portion of the tongue to the brain. The determination of this point will depend mainly on careful observations of disease affecting these nerves in the human subject, for it is very difficult to interpret results of experiments performed for this end on the lower animals. I shall therefore proceed to consider the results of clinical observation in cases of disease of the fifth and seventh nerves.

First, what are the results of paralysis of the facial nerve on the sense of taste in the anterior part of the tongue? No case, so far as I know, has been recorded where facial palsy of peripheral origin has been associated with any affection of taste,† but there are numerous instances where the lesion was situated *above* the origin of the chorda tympani in which taste was lost in the anterior part of the tongue of the diseased side. I shall relate two cases of this kind which recently came under my notice, and in which I carefully investigated this matter.

\* See Fig. 2, page 211.

† Since writing the above I find that Eulenburg mentions some cases of "*disturbance of taste*" from injury of the facial nerve below the origin of the chorda tympani, and he concludes that there is a communication between the lingual nerve and the terminal branches of the facial, through which some of the taste-nerves pass to the facial.—Eulenburg, '*Lehrbuch der functionellen Krankheiten*,' p. 302.

CASE I.—*Paralysis of portio dura of seventh on left side, of deep origin. Total loss of taste in anterior part of tongue on same side.*

D. S—, seaman, æt. 29, was admitted into the Northern Hospital September 7th, 1874, suffering from complete facial paralysis of the left side. The usual appearances characteristic of paralysis of the portio dura were present, but there were no anæsthesia or symptoms of lesion of any other cranial nerve. There was considerable swelling of the left cheek about the zygomatic arch, and much pain was felt on pressure in front of the ear and at the stylo-mastoid process, and movements of the lower jaw were impeded. The following was the history of the patient.

"He has just arrived from a three months' voyage. About two months ago, while at sea, he felt one night severe pain in the left brow and ear. The pain in the brow has continued, more or less, ever since, and is usually worse at night. There has also been swelling of the left brow, which has only lately disappeared. About one month ago he began to have pain in mastication and tenderness in front of and behind the ear. He did not notice any of the paralytic symptoms till ten days ago, and at that time the swelling passed from his brow to the cheek, and he then first observed that he could not smoke on that side, and that his food accumulated between the left cheek and gums. He had a chancre and suppurating bubo seven years ago, but no secondary symptoms."

The urine was of low sp. gr., contained some albumen and hyaline and granular casts. He was treated with iodide of potassium, under the influence of which he greatly improved, the swelling and tenderness of the cheek being to a great extent removed. Some time after admission the sense of taste in the tongue was carefully tested. The tongue was protruded from the mouth, and a strong solution of sugar, or of quassia, was thoroughly applied with a brush to various points of the surface, his answers being given by signals with the hand. The sensibility to touch was equal on both sides of the tongue. The sense of taste was normal in the right half, for he was able to taste both sweet and bitter solutions at the tip, edges, and posterior part of the surface

on that side, but not at the middle and anterior part of the upper surface, which we know is never sensitive to taste. The sweet solution was best appreciated at the tip, and the bitter solution at the back part. With the left half of the tongue he was not able to detect any difference between the bitter and sweet solutions in the front of the tongue; in fact, he merely felt the pressure of the brush; but when either solution was applied far back near the root he at once tasted it. No difference in the appearance of the two sides of the tongue could be detected. The temperature under the left half was  $0.2^{\circ}$  F. higher than the right. There was no dryness of the mouth or deficiency of saliva; on the contrary, for some time he had a superabundance of that secretion, arising apparently from irritation of the left parotid gland from the swelling of the cheek. There was no loss of hearing. I regret I cannot give the completion of this case, as the patient abruptly left the hospital on October 6th. He was then much better, and even the facial paralysis was beginning to disappear. There can be little doubt, from the general symptoms, that the lesion of the portio dura here was of syphilitic origin, affecting the nerve in some part of its passage through the bone, and therefore above the origin of the chorda tympani.

CASE II.—*Facial paralysis following disease of internal ear. Loss of taste on corresponding side of tongue.*

Joseph C—, æt. 33, cab-driver, was admitted into the Liverpool Northern Hospital January 17th, 1874, suffering from complete paralysis of the facial nerve of the right side. He stated that he had suffered from chancre and bubo in 1862, followed about a year after by inflammation of both eyes and some eruption on the skin of the legs. In 1866 he suffered from pains in the shin bones. Nearly a year ago he began to be affected with pains in the head and right ear, which have increased much in severity, and for which he has been under treatment at the Eye and Ear Infirmary for the past three

months. It is only a few weeks since the twisting of the face was observed.

He has the usual characteristic symptoms of complete paralysis of the portio dura of the right side, including falling down of the right posterior arch of the soft palate. There is no anæsthesia of the face, nor any symptom of the other cranial nerves being involved. The pupils of both eyes are fixed and irregular, having been the subject of former inflammation. Hearing is abolished on the right side. No discharge from the ear. There is so much tenderness of the meatus that it is with difficulty that any view of the membrana tympani can be obtained; but so far as one can see it is not perforated.

Pulse 80, very weak. He suffers much from nausea and vomiting, and sleeplessness on account of the pain in the ear.

He was treated with iodide of potassium in large doses, and had one or two blisters behind the ear. He remained in hospital about six months without any material improvement, sometimes a little better and again prostrated by the pain or by attacks of nausea and continued vomiting. No improvement took place in the paralysis, and no change in the condition of the face, except that on May 15th it was noticed that he could not turn the right eye outward, there being partial paralysis of the sixth nerve on that side.

Shortly after his admission the sense of taste was carefully tested, and it was found to be entirely absent from the right side of the tongue, though the sensibility to touch remained perfect. In this case taste was absent from posterior as well as the anterior portion of the right half of the tongue, from which we must conclude that the disease which had involved the facial had also extended to the glosso-pharyngeal. As the glosso-pharyngeal is the afferent nerve in the reflex act of vomiting produced by tickling in throat, could it be that the syphilitic deposit which was probably present in the brain, and which by its pressure on these nerves were causing the loss of taste, at the same time by propagating an irritation along the central portion of the glosso-pharyngeal nerve might give rise to reflex vomiting? There was no evidence of disease of the stomach, and the vomiting was



not like "cerebral vomiting;" it was more continuous, and was accompanied by nausea. I have seen this man recently, and find his condition unchanged, except that he is now sinking from exhaustion.

These cases and numerous others which have been recorded by various observers point strongly to the conclusion that the nerves of taste of the front of the tongue pass upwards to the brain by way of the facial nerve, and must therefore, of course, pass from the tongue to the trunk of that nerve by its chorda tympani branch. Experiments on the lower animals, by section of the chorda tympani or of the facial above that branch, are much less clear in their results, owing to the difficulty of interpretation; but still, on the whole, they support this view (Claude Bernard, Schiff, Lussana). Claude Bernard has proved that the chorda tympani is the motor nerve to the submaxillary gland,\* and it has been suggested that this nerve only influences taste by means of this connection with the submaxillary gland; that when the chorda tympani is paralysed the secretion of the gland is diminished, and the tongue becomes dry and unable to perceive tastes. But in both the cases which I have recorded there was no difference between the two sides of the tongue as to moisture or appearance. Moreover, Prevost has recently proved that a portion of the fibres of the chorda tympani pass to the tip and edge of the tongue,† and so have an immediate relation to the anterior taste-area. Vulpian considers it is a vaso-motor nerve both to the submaxillary gland and to the mucous membrane of the tongue, and only in this way has the power of disturbing taste; but this is hypothetical. It has also been supposed that it acts as a motor nerve to erect the papillæ, and so is subservient to the sense of taste, but this is a pure guess. Wilde records a curious fact which supports the view of the chorda tympani being a taste nerve. He says that when the membrana tympani is

\* Bernard, 'Leçons,' &c., ii, 148; Flint's 'Physiology,' iv, 158.

† Prevost divided the chorda tympani in dogs, and a week after he examined the terminal branches of the lingual nerve, where he found degenerated fibres.—'Journ. Anat. et Phys.,' vii, p. 343.

perforated and caustic is applied "it is in many cases tasted in the mouth almost immediately, but only on the side to which it is applied. Patients say they feel the impression of the caustic running down along that side of the tongue, but not reaching the tip. I never knew this peculiarity except when there was a hole in the membrane. Is it transmitted by continuity of mucous surface or by means of the chorda tympani?"\*

Whether the taste nerves of the chorda tympani accompany the facial nerve to its origin in the brain, or again leave it, we shall consider later on.

We have now to speak of the effect of lesions of the fifth on taste. Of course division of the lingual nerve below its union with the chorda tympani causes loss both of sensibility and taste in the front of the tongue; but division above that point, according to Schiff and Lussana,† abolishes only sensibility, and not taste. Not only experiments on animals, but also many observations of disease of the fifth nerve in man, give this result. One of the most interesting of these is a case related by Dr. Noble, of Manchester,‡ of a woman, aged fifty, who had complete anæsthesia of the left half of the face and tongue without loss of motion. The sense of taste, however, in the left half of the tongue was unimpaired, "while its common sensibility is all but destroyed. To impressions of tact, of pain, of the rough or the smooth, of heat or of cold, she is all but insensible, while to impressions of the bitter or the sweet, or any other modification of the sense of taste, she is as acutely alive on the affected as on the sound half of the tongue."

Similar cases are recorded by Schiff and Lussana§ and by Romberg.||

The following illustrative case recently came under my notice.

\* Wilde's 'Aural Surgery,' p. 305.

† Flint's 'Physiology,' iv, p. 195.

‡ 'Med. Gaz.,' 1835, xv, p. 120.

§ 'Journ. Anat. et Phys.,' vi, 227.

|| Romberg, i, 258.

CASE III.—*Anæsthesia of the fifth nerve of the right side without (at first) loss of taste in the anterior half of the tongue.*

John C—, æt. 43, miller, was admitted to the surgical wards of the Northern Hospital January 31st, 1874, having fallen forty feet from a hoist. On admission he was unconscious and bleeding from the right ear. There was also fracture of the right clavicle, arm, and ribs, and emphysematous swelling over the chest. The right eye was ecchymosed.

Next day he had partially recovered consciousness and was very irritable, and abundant serous fluid was oozing from the right ear.

February 5th.—In consequence of the delirious symptoms which had shown themselves for the last two days his head was shaved and blisters applied.

7th.—Delirium abated.

14th.—He is now quite sensible, says he has much less pain in the head, and feels much better.

16th.—Loss of sensibility was noted on the right side of the face (it is possible this may have existed from the first).

18th.—There is paralysis of some of the facial muscles on the right side. Serous fluid is again discharging from the ear.

19th.—Facial palsy is more marked—in fact, is nearly complete—on the right side; the tongue also is protruded to the right side. His temper is very irritable.

His state so far as the face was concerned did not alter much after the last date.

On March 20th he was transferred to the medical wards, and came under my care. His condition then was noted as follows:—"He complains of numbness of the right side of the face, and of ringing in the ears. There is partial paralysis of the portio dura on that side. When the face is at rest there is not much dragging of the mouth observed, but when he is requested to raise the upper lip so as to show his upper teeth, the paralysis is at once evident. He cannot whistle or puff the cheeks. He can only half close the right eyelid; but he can knit the brow, though not so well as on the left side. The tongue is protruded straight.

"There is complete insensibility of the skin of the right side of the face and scalp in front of a line drawn vertically from the top of the ear, and bounded below by the margin of the lower jaw (see Fig. 1). There is a small area of the cheek (shaded light

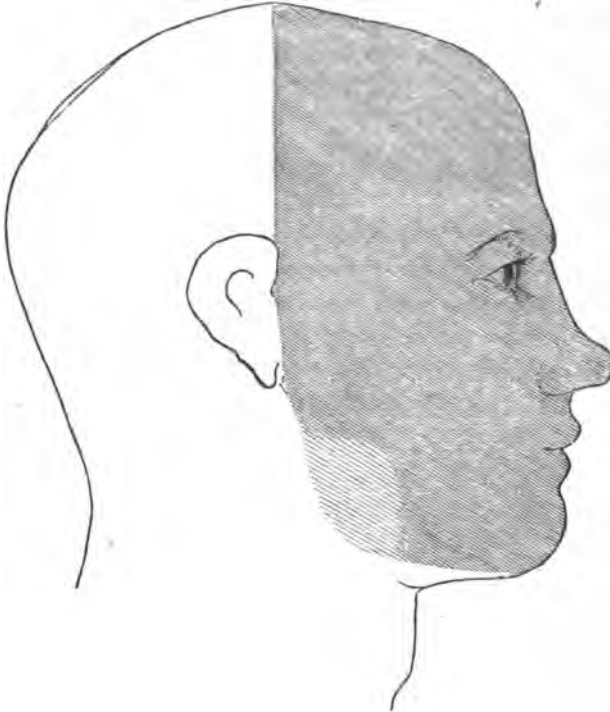


FIG. 1.—CASE OF ANÆSTHESIA OF FIFTH NERVE.

The dark portion shows the extent of total insensibility. In the light-shaded part the sensibility is only very slightly deficient, being supplied with cutaneous nerves from the cervical plexus. The clear portion is normal.

in the drawing) which is supplied by nerves from the cervical plexus, where the sensibility is nearly complete. There is slight vascularity of the conjunctiva of the right eye, and a little dimness and superficial ulceration of the cornea. Pupils normal. Sensibility is absent from the right side of the tongue, but taste appears normal. No apparent paralysis of the muscles of mastication. There is total deafness of the right ear. No paralysis of the palate. General health good."

A few days later the sense of taste of the anterior of the tongue was carefully tested, the tongue being protruded, and syrup being applied to different points with a brush. It was found that, though he recognised the sweet taste equally well with both sides of the tongue, yet the recognition was delayed on the right side as compared with the left. There was no difference in the appearance of the two halves of the tongue. He remained in hospital till May 5th, during which time considerable improvement took place in the paralysis of the seventh, but the anæsthesia of the fifth remained unaltered. The state of the affected eye also was greatly improved.

On May 17th he was readmitted on account of the unsatisfactory condition of the right eye. There was chemosis, and ulceration of the cornea, and hypopion. The paralysis of the facial nerve was much less marked, but the anæsthesia remained as before and the taste unaltered.

After about two months' residence in hospital, the progress of the disease of the right eye having been checked, he was again dismissed and resumed work.

On October 3rd he was seen by me and his condition was as follows. "The facial palsy has disappeared, but the anæsthesia of the right side of the face remains complete. There is general opacity of the cornea, but the eye is now free from any active disease. There is complete deafness on the right side. The sense of smell is imperfect; he thinks especially so in the right nostril, which is also sore. As regards taste, it is *now absent* in the anterior part of the right side of the tongue, which is also quite insensible to touch as far back as the circumvallate papillæ, but at the posterior part he both feels and tastes. This was repeatedly and carefully tested. When the tongue was drawn into the mouth after some sweet substance had been placed on some part of it he thought then he felt the taste all over the tongue. No wasting or other change of the right side of the tongue can be either felt or seen. The temperature of the inside of the right cheek is  $0.4^{\circ}$  F. less than that of the left, and under the right half of the tongue  $0.3^{\circ}$  F. less than under the left."

In this case the injury received was probably a limited frac-

ture of the base of the brain, and the lesion of the fifth nerve of the right side was complete, and was either simultaneous with the fracture or resulted very soon after, though the anæsthesia was only observed later on when his delirium passed away. The lesion of the portio dura of the seventh nerve, on the contrary, was due to secondary changes, probably the pressure of inflammatory deposit, and the nerve was only partially paralysed, and again completely recovered itself. The persistence of the sense of taste at the right margin and tip of the tongue, which were quite insensible to touch, was fully established, and led me to look upon this case as another proof that the fifth nerve is unconnected with taste, but the subsequent change and the apparent disappearance of taste is puzzling.

It is now, however, necessary to state that some observations that have been made on this subject do not agree with those I have related. There are many cases recorded of anæsthesia of the fifth nerve where taste was abolished on the affected side. Romberg collects four such cases, though it must be acknowledged that in all of them the facial or chorda tympani either was involved or may have been.\* Dixon relates two cases in which taste was lost in connection with anæsthesia of the fifth, without involvement of the facial;† other cases are referred to by authors, but not given in full detail.‡ Some experiments also have been made, the results of which coincide with these cases, but Longet acknowledges that it is very difficult to divide the fifth in the cranial cavity without also injuring the facial.

We have, then, two contradictory series of observations as to

\* Romberg, 'Nerv. Syst.,' Syd. Soc., ii, p. 252. In the first case the tumour, which pressed on the fifth and caused paralysis, also involved the seventh; in the second the tumour extended to the internal auditory foramen; in the third, where the paralysis was caused by exudation in the neurilemma of the inferior maxillary branch of the fifth down to the otic ganglion, it is not improbable that the disease may have really extended a little lower down than appeared to the naked eye, and involved the chorda tympani. In this case the disease was of four years' duration. In the fourth case, which was the result of a gunshot wound, there were very extensive changes at the base of the brain and a large wound of the neck, and no record is given of the state of the facial or chorda tympani.

† 'Med.-Chir. Trans.,' xxviii, 1845.

‡ Eulenburg, op. cit., pp. 300, 301.

the effect of lesions of the fifth nerve on the sense of taste. The one series represents no loss of taste as occurring, the other shows abolition of taste in the front of the tongue. How are we to reconcile them? If there have been errors of observation, on which side do they lie? To my mind the evidence is stronger for the view that the nerves of taste pass from the tongue by the chorda tympani to the facial.

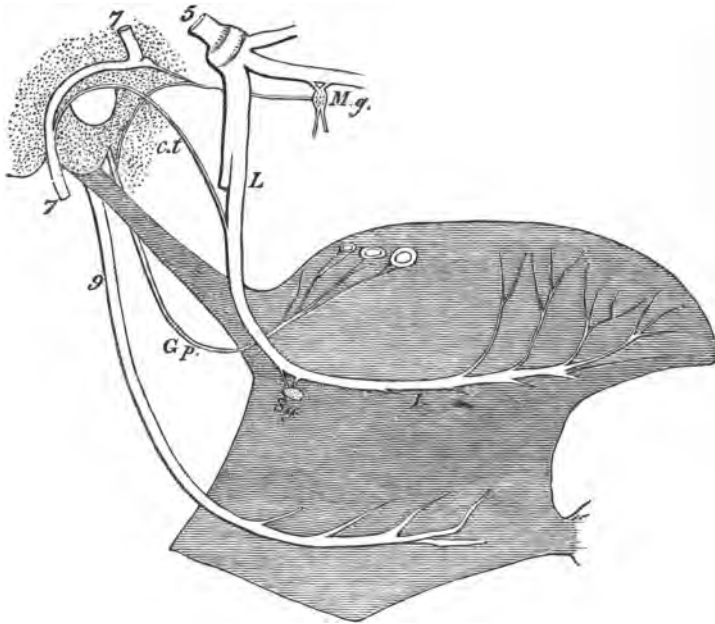


FIG. 2.—DIAGRAM OF THE NERVOUS SUPPLY OF THE TONGUE.

5. The fifth nerve. *L*. Its lingual or gustatory branch, supplying the anterior part of the tongue with sensibility.

7. The facial nerve, or portio dura of the seventh giving off at its bend the great superficial petrosal nerve to Meckel's ganglion, *M.g.* *c.t.* The chorda tympani nerve, passing from the facial to the lingual branch of the fifth. *S.g.* The submaxillary ganglion. *G.p.* The glosso-pharyngeal nerve going to the back of the tongue and the circumvallate papillae; a small twig passes from it to the great superficial petrosal nerve.

9. The hypoglossal nerve; the motor nerve of the tongue.

From the trunk of the facial they may pass direct to the brain, probably by the intermediary nerve of Wrisberg, which connects the portio dura and portio mollis of the seventh nerve. This inter-

mediary nerve enters the medulla along with the portio mollis and is connected with a distinct nucleus of grey matter. Schiff has propounded a different view of the course of the taste nerves, which is intended to meet the difficulty that lesions of the fifth nerve as well as the seventh appear to give rise to loss of taste. He thinks that the taste nerves, after reaching the facial by the chorda tympani, accompany it as far as the geniculate ganglion (shown in the diagram), and then leave it by the great superficial petrosal nerve, to Meckel's ganglion (*M.g.*), and so are associated with the second division of the fifth. One anatomical fact gives some support to this view, namely, that according to Owen\* the chorda tympani in the horse and calf may be shown by dissection to be continuous with the great superficial petrosal.† But this will not account for those cases in which there was total paralysis of all the three divisions of the fifth, and yet taste remained intact. Moreover, Prevost has found the removal of Meckel's ganglion on both sides caused no disturbance of taste.‡

If we accept the chorda tympani as the nerve of taste from the anterior portion of the tongue, the only difficulty we have to meet is how to explain those few cases recorded by Dixon and others of anæsthesia of the fifth without disease of the seventh, where taste was also lost. The case which I have related above (Case III) may furnish the key to the discrepancy. In it the anæsthesia was complete, but the loss of taste was gradual, and was possibly a secondary result, connected with progressive changes in the tongue itself, due to the altered nervous condition. So it is possible that in Dixon's case there was an earlier period when no loss of taste existed.

The subject must be considered as still in an unsettled state, and we shall look for further observations and experiments which may throw new light upon it.

\* 'Hunter's Collected Works,' iv, 194.

† Schiff gives a case in support of this theory.—'Centralblatt,' 1873.

‡ 'Journ. Anat. Phys.,' May, 1874.



## ON THE TREATMENT OF GONORRHOEAL OPHTHALMIA.

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My object in this paper is to bring before the readers of the 'Hospital Reports' a mode of treating the above grave disease which differs materially from that advised by all the text-books and almost universally followed by ophthalmologists. I presume no apology is necessary for so doing, inasmuch as the disease is of interest to most people, practitioners or laymen; to the former because every medical man is called upon to treat gonorrhœa at some period of his professional life, and therefore his eyes are liable to the disease; and to the latter since, if we may believe Ricord, 90 per cent. of them are at some time or other the subjects of the urethral affection. Of its grave importance to medical men the case of a well-known eminent surgical writer, who a few years ago lost an eye from this disease, acquired from a patient, will be a sufficient example.

It may be convenient first to describe a typical case which I had the advantage of watching from the first, and which was treated, as far as caution would allow, after the methods authoritatively laid down, then to detail the reasons which led me to depart from such methods to some extent, and to relate cases treated after the altered plan.

Early in June, 1872, I was called to see A. B., a not very robust young gentleman, for a supposed severe cold in the eye. I found the usual signs of this—redness and slight swelling of the eyelids and of conjunctiva, and some mucous discharge. He was advised to keep indoors, to use a collyrium of acetate of lead, gr. ij to the ounce of distilled water, and to take an aperient.

Next day, however, the symptoms had so greatly increased in severity that I ordered him to bed, without at first suspecting gonorrhoeal infection. But, during the time necessary for the patient's donning his night-dress, suspicion was aroused and I found that he had a virulent urethral discharge. The gravity of the case was at once apparent, and measures were taken accordingly. The sound eye was carefully sealed up with plaster, the edge of which and the skin adjacent were thickly coated with collodion. The temple was freely blistered. The lids of the affected eye, which could scarcely be opened even at this early period, were covered with pieces of lint made cold by being laid on a block of ice; the discharge was frequently syringed away with a weak solution of Condyl's fluid, the lids were kept from sticking together and so penning up the discharge by frequent anointing with oil; also it was sought to lessen the tension of the ocular conjunctiva, which was in a state of chemosis, and that of the upper lid by scarification; later on, when inspection of the eye itself was prevented by the great projection of the upper lid, the conjunctiva of the latter was painted with a solution of glycerine of tannin, the strength of which was increased day by day, but never so as to cause pain. Great caution was indeed necessary lest a small temporary increase of pressure on the cornea should cause it to slough altogether. Nevertheless, it was never thought great enough to warrant the extreme procedure of dividing the outer canthus.

The disease appeared to run its course without being markedly checked by the treatment, but at length on the seventh day of attendance—ninth of disease—a slight change for the better took place, the tension of the lids, as shown by their swollen shiny red appearance, began to lessen and a stronger solution of the lotion could be borne without pain.

I used the glycerine of tannin for two reasons—first, because I believed that the lead lotion employed at first, though very weak, had aggravated the disease, and I thought it probable that other metallic salts would do likewise; and secondly, because I hoped that the glycerine would lessen the inflammatory thickening of the lids by the copious watery discharge which it has the power of bring-

ing from mucous surfaces.\* The giving of pain was carefully avoided; the glycerine of tannin lotion was strengthened so as never to cause it. For most of the time the very cold lint was borne, but after the climax of the disease the patient preferred the lint to be merely dipped in iced water and wrung out before being placed on his lids.

All this time, too, the general health was well attended to. General bleeding was not practised, but the heart's action was kept within bounds by the cautious use of aconite, and the bowels were compelled to act freely every day.

About the twelfth day of the disease the swelling of the lids had so far lessened that I was able to explore the whole of the cornea, and found in its upper part the peculiar groove which is usually produced in cases of such severe character as the one in question. This groove is described by authors as an ulcerated groove, but when one is able to see it, it presents the signs of a healing ulcer, namely, the edges are not excavated or even sharp, but the whole looks as if it were cut out with a gouge chisel and the edges scraped round. In this instance the groove began at a point level with the outer commissure, about a line from the sclero-corneal junction, and continued parallel to it for a third of the circumference of the cornea. The outer end of the groove was deeper than the inner. The patient was warned about touching his eye, and the treatment continued. All went on well till the twenty-second day, when "twixt sleep and wake" the patient bored his knuckle into his eye with the result of causing a considerable rupture of the cornea at the outer end of the groove and a corresponding prolapse of iris. Of course there was much irritation set up, and atropine was used to allay this, which it soon did. But as it was found to favour the bulging of the iris, after the first symptoms of irritation had passed away a solution of extract of Calabar bean in glycerine, one part to sixty, was cautiously used; this kept the bulging part as small as possible, and the groove filled up and the perforation healed without any other accident. Optically the eye was not notably impaired; the pupil was of course slightly altered in shape, but in a few months afterwards

\* See Marion Sims, 'Clinical Notes on Uterine Surgery.'

the patient averred that he was unaware of any difference between the affected and the unaffected eye.

Now, in reviewing the foregoing case I am unaware that I could have done better with the light which I had at the time, save that more might have been done to protect the cornea from mechanical injury. The patient had, however, been so quiet during the acute stage that it was thought unnecessary.

I am aware I did not adopt the heroic treatment advocated by some authors, namely, that by application to the conjunctiva of powerful caustics, such as strong solutions of nitrate of silver, or even of the solid stick of this salt. In the case in question I simply dared not. Between the first and second day of visitation the disease had made such a leap, and the patient had so much pain at and after the instillation of the weak lead lotion, that I could not help thinking that it had been intensified thereby. But the other measures were well followed up. Scarification in the earlier stages was freely employed, though I never ventured on the extraordinary plan advocated by Mr. Soelberg Wells, who proposed to treat generally by iced compresses, but after scarification to use hot sponges for encouragement of flow of blood. Surely it is not good practice to alternate a temperature little above freezing point with one as hot as can be borne.

It may be well to digress here and recapitulate more particularly the course recommended by the chief writers during the last twenty years. Mackenzie, fourth edition, 1854, advises free bloodletting, both by venesection (10 to 30 oz., leeches 6 to 24); scarification of conjunctiva, and even cutting out of folds of it; free purgation, diaphoretics, alteratives, as calomel with opium, or instead of these iodide of potassium. Of local treatment, he says that "Soaking them—the eyes—constantly with tepid water, or laying emollient cataplasms over them, would be almost certain destruction, and, on the other hand, a perpetual succession of stimulating solutions and salves would be not less detrimental."

Careful cleansing away of discharge is insisted on.

Of astringents and escharotics, he condemns lead and zinc lotions, and prefers nitrate of silver, of a strength of two to ten grains to

the ounce of distilled water. He mentions also that some practitioners\* trust entirely to touching lightly the conjunctiva with the lunar caustic pencil. But he says, "I conceive that if only caustic is employed, without depletion, the eye is very likely to be lost." Counter-irritation he strongly advises from the very first.

Next in authority, thought not, perhaps, in time of publication, Stellwag von Carion advises the use of nitrate of silver much as Mackenzie does, preferring it to the solid stick, but acknowledging even weak solutions may act prejudicially. General bleeding he does not mention, but speaks favourably of local bleeding.

Of iced compresses, used as in the case above related, he speaks highly. The division of the outer canthus is to be made "if the danger appears very great."

Scarification and exsection of folds of the chemotic conjunctiva are at least untrustworthy.

Fano, in his account of the treatment of this disease, is noteworthy only through his mention of Gouzzée's plan, in which "on cautérise les *quatre* paupières, alors même qu'un *seul œil est malade*." There is also a rap at English surgeons in the person of Sir Astley Cooper, who in 1829, on a visit to Dupuytren's clinique, was shown a young man affected with gonorrhœal ophthalmia. Sir Astley advised the coaxing back of the urethral discharge by means of a sound kept in the urethra and the administration of a pill containing five grains of calomel every two hours until the production of salivation. The eye, however, he adds drily, burst two days afterwards in spite of this treatment.

Fano, however, thinks no better of Dupuytren's treatment, which consisted in the blowing in of calomel once or twice a day, and in the evening of instillation of laudanum.

Bader and Wells concur in reliance on iced compresses, cauterization by mitigated nitrate of silver, local bleeding, and scarification. Wells alone advocates application of warm sponges after the latter operation, as above mentioned.

Through all these recommendations there runs a very evident

\* *Vide* Desmarres, 'Traité théorique et pratique des Maladies des Yeux.' 1847.

thread of doubt as to the propriety of each, and only about this is there no doubt, that gonorrhœal ophthalmia is one of the most fatal of eye diseases. And when we consider the disaster so lamentable to the eminent surgeon alluded to early in this paper, who lost his eye though he had the advantage of the best skill which could be afforded, it does not seem presumptuous to advocate something different. Statistics as to the result of treatment are difficult to get at. Lawrence,\* quoted by Mackenzie, says, of 14 cases, 9 had only 1 affected, of which 9 eyes, 6 were lost; of 5 cases having both affected, out of the 10 eyes, 6 were lost and 4 saved, and 3 retained perfect sight, though 1 had anterior synechia and 1 leucoma.

Considering the great frequency of gonorrhœa, it is a matter of surprise that the eye affection is so rare. No other case came before me until December 3rd, 1873, when in the space of a fortnight I saw three cases, the first of which, a youth, C. D., applied at St. Paul's Eye and Ear Hospital with one eye in about the same stage as that of A. B. on the first day of attendance, and the other in a state similar to A. B.'s at its height. The case of the latter was brought forcibly to my mind, and I could not help thinking of the little effect the treatment had in preventing the chief danger to the eye, namely, the enormous thickening of the tarsal and ocular conjunctiva, and the consequent risk of ulceration and sloughing of the cornea. In the iced compress I had lost confidence, so I did not order it to be applied, but merely that the lint covering the eyes should be kept wetted with the same lotion used for instillation. Of course, the other ordinary treatment of cleansing and anointing was used. The lotion with which we began was of sulphate of zinc, two grains to the ounce, afterwards increased to four grains. When I saw him next day I found that the matron, accustomed to treat so many cases with warm applications, had put outside the lint a piece of gutta percha, which piece, however, was so much smaller than the moistened lint that the character of the dressing was not fully decided; evaporation was very slow, but at the same time not completely checked. I examined the lids with some

\* 'Treatise on the Venereal Diseases of the Eye,' p. 25. London, 1830.

apprehension, and to my delight found them rather better. I resolved, therefore, to take the hint. I had previous to this been constantly in the habit of using warm and moist applications for various inflammations of the globe itself, in which cold is generally prescribed, and having been long persuaded that moist heat is the most powerful agent for preventing and limiting acute inflammatory swelling and suppuration in other parts of the body, I determined to follow the lead I had got and to make a cautious trial in C. D.'s case. Accordingly, the lids of both eyes were covered with a large piece of lint dipped in the lotion and an ample piece of gutta serena was carefully bandaged over all. I looked at the eyes with some anxiety six hours afterwards, but found no reason to regret the treatment. The lids had lost completely the tense shiny appearance, there was no appearance of coagulation of discharge at the commissure, and the patient was quite comfortable. The treatment was, therefore, continued, the grave symptoms lessening materially every day. The severity of the disease in the worse eye may be judged by the fact that the affected groove was found, when we were able to lift the lid, to extend farther inwards than in the case of A. B. No rupture took place in this case, as the accident was well guarded against, and the only defect was in appearance, caused by the dense white crescent which filled up the ulcerated groove. Nevertheless, as the upper lid covered it, it was no detriment. The less affected eye recovered without any damage whatever.

In the other two cases what was noteworthy may be stated shortly. Of these, one was also a youth, E. F., who was in hospital on account of congenital syphilitic kerato-iritis. Being convalescent, and having a natural turn for nursing, he was employed by the matron to assist her in the treatment of C. D. Although he had been warned of the danger of contagion he managed to inoculate one of his own eyes, which, when my attention was called to it, showed the usual signs of early gonorrhoeal inflammation. He was at once put to bed and the same treatment as in C. D.'s case was followed. *The eye never became worse*, and was well in a few days.

The last case was that of a married woman, G. H., who applied

at St. Paul's on the 10th of December, 1873. Both her eyes were in an advanced stage of gonorrhoeal ophthalmia, and there could be no doubt from the appearance of the lids that the cornea was severely ulcerated. Although warned of the danger of losing both eyes, she could not be persuaded to become an in-patient of the hospital. However, under as careful treatment as could be afforded to her as an out-patient, the discharge and swelling of the lids soon subsided. On account of temporary absence I did not see her for several days, when I found that the gonorrhoeal signs proper had ceased, but that she had a perforation of the cornea and adhesion of the iris in both eyes. With similar treatment to that pursued in like circumstances in A. B. both eyes recovered with less damage to vision than might have been anticipated.

Since the case of G. H. I have not had a case of gonorrhoeal ophthalmia in the adult, but I have pursued the same treatment in a good number of cases of children wherein the severity of the symptoms led one to believe that the disease was brought on by a poison, if not actually gonorrhoeal, little less virulent. With the exception of one case, the infant daughter of a drunken mother, first seen when the disease had far advanced, I have had no instances of perforation of the cornea, and I therefore recommend for trial the treatment of severe ophthalmo-blenorrhoea as above described, as one which has proved itself in my hands safe, and, what is of some consideration for the patient, as against the caustic treatment, painless.



## THE VECTIS AS AN OBSTETRIC INSTRUMENT.

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THE discovery of this instrument is involved in considerable obscurity; it has been ascribed to Celsus, to Mauriceau, to Roonhuysen of Amsterdam, to the elder Chamberlen, and others.

It seems clear, at least, that it was known and used by both Roonhuysen and the Chamberlens, and by each of them was kept a profound secret, handed down and carefully preserved by their immediate successors, until about 1753, when two Dutch practitioners, MM. Jacobus de Vesscher and Hugo van de Poll, bought the secret for 5000 livres, and immediately published it to the world.

From this period the vectis has maintained its place in the practice of this country as an obstetric instrument, and may be said to have been employed side by side with the forceps, but with a varying degree of estimation; at some periods and by some accoucheurs being thought far superior to the forceps, at other times and by other practitioners being held in disfavour, or almost entirely abandoned as a trustworthy aid in difficult labour. Roonhuysen and Chamberlen used it as a lever of the first kind, the fulcrum being the pelvis, but the frequent injuries inflicted upon the soft parts of the mother by this palpably improper mode of employing it led Pearce, in 1772, to suggest a practice still occasionally adopted, viz. making one hand of the operator the fulcrum. Somewhat later (1783) Dease, of Dublin, altogether condemned its employment as a lever of the first kind, and proposed that it should be used as a

tractor only, and changed its designation from the vectis or lever to that of *The Extractor*. Dr. Hamilton, senior, considered the vectis extremely limited in its uses ; Dr. Bland preferred it to the forceps ; Dr. John Clarke concludes an unfavorable commentary upon it thus, " We either cannot use much force with the vectis, or if we do, it will be at the certainty of doing much mischief."

Dr. Burns, of Glasgow, regards it " more in the light of an aid to the pains than the forceps, and more dependent on them for success, consequently more limited in its utility. In this view it is a subordinate instrument, in so far as it is used in milder cases of arrest, which, perhaps, might ultimately have terminated by the natural efforts, but to which it might not have been prudent longer to have trusted."

Dr. James Hamilton, jun., thought that " it should only be employed in certain cases, where there is a slight degree of narrowness at the brim, or where the face of the infant is forced forwards."

Dr. Gooch attributed little or no value to the vectis, on account of its only aiding feeble pains and not supplying their place.

Dr. Conquest says, " Whilst under some circumstances the lever is doubtless preferable to the forceps, the latter is now very generally admitted to be in the majority of cases by far the most useful instrument."

Dr. Ashwell (1834) attaches but little comparative value to it.

Dr. Maunsel observes that " either instrument (forceps or vectis) may be employed by competent persons with perfect safety."

Dr. Blundell describes the tractor or lever as " an instrument excellent and of great effect in dextrous hands. If skill and judgment are wanting, even the tractor (vectis) may inflict dreadful injuries, but in such hands still greater mischief may be expected from the long forceps. To you, therefore, I recommend its use, as the safer instrument of the two, possessing, as it does in an eminent manner, the advantages of portability and ready application."

In France, Levret is the first writer who alludes to the vectis. He places it lower than the forceps in point of utility. Baude-

locque and Maygrier form a similar estimate of its value. Mad. Bovin (1817) has a very low opinion of it. "Le levier, cet instrument si long temps mysterieux chez les Hollandais, le levier lui-même commence à tomber en desuetude malgré son apologiste Herbiniaux." Mad. La Chappelle discards it altogether. M. Velpeau admits its utility in certain cases.

It would appear, therefore, that up to the end of the last generation, although the vectis had its advocates and its utility, and even its preference to the forceps in certain cases was recognised, nevertheless it was in the estimation of by far the majority of authorities decidedly inferior in value to the forceps, and this too at a period when the latter instrument was not nearly so much appreciated, nor its powers and its employment so well understood or so extensively availed of, as it is at present. In those days instrumental delivery was regarded with what we now know to have been a mistaken exaggeration of its danger, which has happily been dispelled by the clearer knowledge of the subject afforded by the great advance in the physiology and mechanism of parturition. Even Burns, that eminent and accomplished teacher of obstetrics, thus wrote :—"Let it be carefully recollected, at the same time, that so long as the head advances ever so slowly, the patient's pulse continues good, the abdomen free from pain on pressure, and no obstruction to the removal of the urine, interference should not be attempted unless the *child be dead*." More in accordance with our present views, and worthy of record as an indication of the then dawning light of an improved and sounder obstetric practice, are the words of Dr. Hamilton in his 'Practical Observations.' He says, "There is too much reason to believe that British practitioners, from their unwillingness to give pain or hurt the feelings of their patients, are apt to procrastinate and to lose the favorable time for safe and effectual interference. No intelligent practitioner would wait, in cases where the labour throes cease to have any influence in advancing the delivery of the head of the infant within reach of the forceps, till there be heat or tenderness of the passages, and still less till the patient's strength be much exhausted."

It may appear irrelevant and, perhaps, scarcely complimentary

to the intelligence of those of my readers who are familiar with obstetric teaching and practice of the present day to have obtruded on their notice these quotations from Burns and Hamilton. I plead as my apology and justification that even recently a tendency has shown itself to what I conceive to be a retrograde view of the comparative value of the forceps and vectis, involving questionable, if not unsound, teaching, rather in the direction of undervaluing the former than of unduly extolling the latter. But I am anticipating, and will return more directly to the subject of the vectis by referring to the opinions held by writers of our own more immediate time. From these it would seem that as the real value of the forceps has become better appreciated and the true principles of the mechanism and physiology of parturition more generally understood, the vectis has gradually fallen in estimation and found its position as a subordinate instrument, used but rarely by many and completely laid aside by others.

One of the most recent and highly estimated writers, Schroeder, of Erlangen, in his 'Manual,' which treats most fully of the varieties of difficult labour and their management, does not so much as allude to the vectis. Leithman, of Glasgow, after advancing all that, perhaps, can be said in its favour, concludes with the remark, "With rare exceptions the vectis, although a powerful instrument, is completely superseded by the forceps, by which can be effected, more speedily and more safely, almost all that the vectis can accomplish." The late Dr. Tyler Smith, in his 'Manual,' disposes of the instrument in the following brief summary:—"The vectis or lever was formerly much used in difficult labours, but for a long time it fell into desuetude, having been completely superseded by the forceps. In recent years its use has been revived to some extent to rectify malpositions and expedite delivery. One blade of the short straight forceps makes a very good vectis, and will do all that can be effected by this instrument."

Professor Murphy speaks of it as "liable to some disadvantages from which the forceps is free." "It is not, therefore, an instrument of much power, and its use is limited to the removal

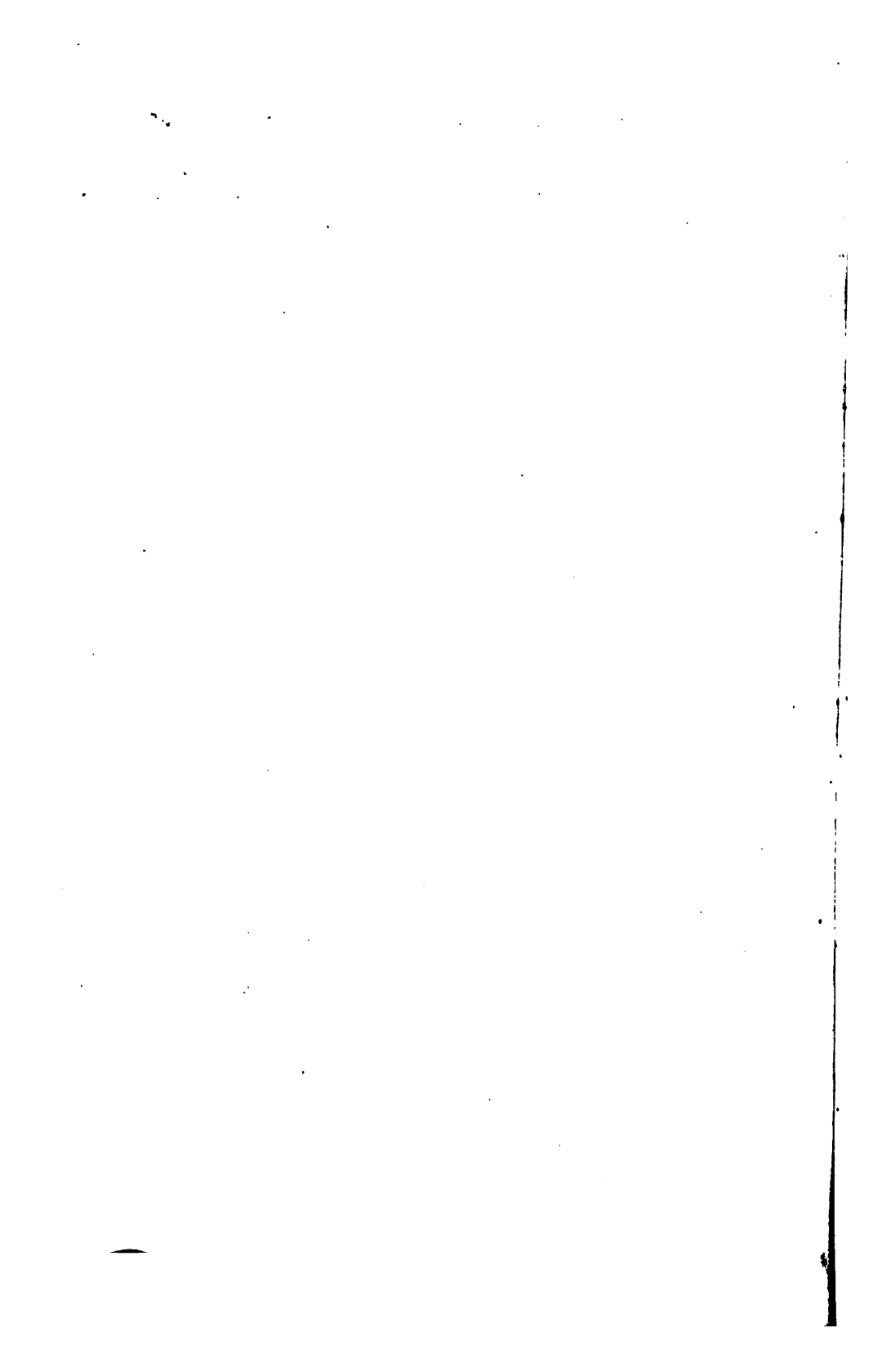
of slight impediments to the passage of the head." Dr. F. H. Ramsbotham enters fully into the relative merits of the two instruments, and gives a very decided preference to the forceps. Dr. Barnes limits its application to certain minor difficulties, as face presentations and allied malpositions. Simpson in his lectures taught the use of the vectis, but evidently put no high value upon its capabilities. As to the Dublin school, some estimate may be formed of the extent to which it is employed from the fact that in the large collection of cases reported by Johnson and Sinclair in one case only was the vectis used. So far as my acquaintance with the recorded opinions of the authorities of the day enable me to judge, the view almost exclusively held is that the lever, as compared with the forceps, is infinitely less important and valuable. It cannot, however, on the other hand, be denied that in our own time, as formerly, the vectis has been used with great success by some accoucheurs, who have therefore held and taught that it is not only equal to but superior to the forceps, a doctrine which is altogether at variance with my own experience and, as I have already shown, with that of a large majority of the authorities of the day—a doctrine, moreover, which if, as I believe, is not in accordance with the teachings of experience and sound practice, is calculated to mislead the inexperienced accoucheur, and at the same time to destroy the confidence hitherto placed in that most useful and trustworthy aid in difficult labour, the forceps.

As a mere question of mechanics, it is not easy to understand how the single-bladed instrument can possibly compete with the more complete double-bladed instrument; and as its advocates insist strongly on its being used, not as a lever, but as a tractor only, it is admitted that they dispense with lever action altogether, an element which constitutes one of the greatest advantages of well-constructed forceps when skilfully used. Another defect in the vectis is the impossibility of adding to other forces that of compression, which under certain circumstances is of the greatest assistance in overcoming obstruction without compromising the safety of mother or child. Among the alleged superior advantages of the vectis those of simplicity and greater facility of

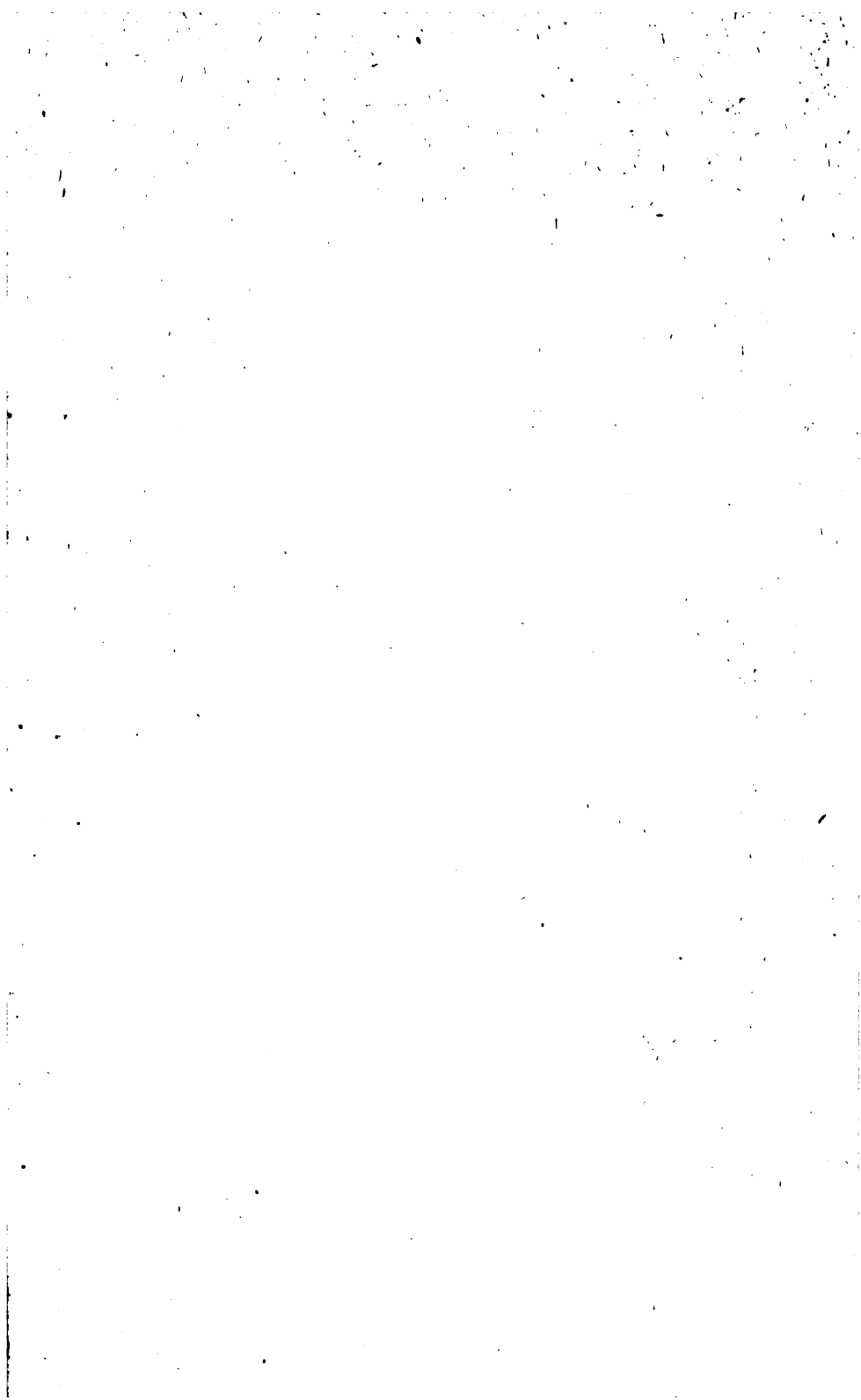
introduction appear to me unworthy of consideration in scientific obstetrics, unless it can be shown that, not only are the difficulties of the operator lessened, but the safety and well-being of the woman and offspring are at the same time more effectually secured. I venture to say that no practitioner who has not learned how to apply the forceps without difficulty is fit to undertake the management of a severe nor, indeed, of the most simple case of obstructed labour. Certainly in unskilful or incautious hands an accident would much more readily occur during extraction with the lever than with the forceps, owing to the increased risk of slipping; indeed, I am persuaded that exceptional dexterity and special mechanical skill—greater, perhaps, than many average accoucheurs and even many of those of superior capabilities, have been able to acquire—are necessary to enable any one to accomplish with the lever that which can be effected with comparative facility with the more perfect instrument the forceps.

To those who have recently recorded great results accomplished by the vectis I would accord a tribute to their exceptional dexterity and mechanical skill, but cannot admit that they have thereby proved the greater excellence and suitability of the instrument they use. We have heard of surgeons who prided themselves on passing the catheter with one hand; the London sightseers have lately been astonished to see a man actually able to dance on one leg, and we are told he was able to execute saltatory movements with far more grace and agility than many persons could execute with both legs. Now, however much we may admire and wonder at these special instances of mechanical dexterity in certain individuals, we should hesitate to recommend surgeons in the one case or dancers in the other to waste their energies in striving to accomplish by these extraordinary means results which may be equally gained in the usual way. And for similar reasons we would advise obstetricians not to sacrifice their time and labour in striving to acquire the supererogatory mechanical skill to qualify them to effect with an incomplete and one-handed instrument that which can be done more easily, more safely, and more effectually by the more perfect two-handed

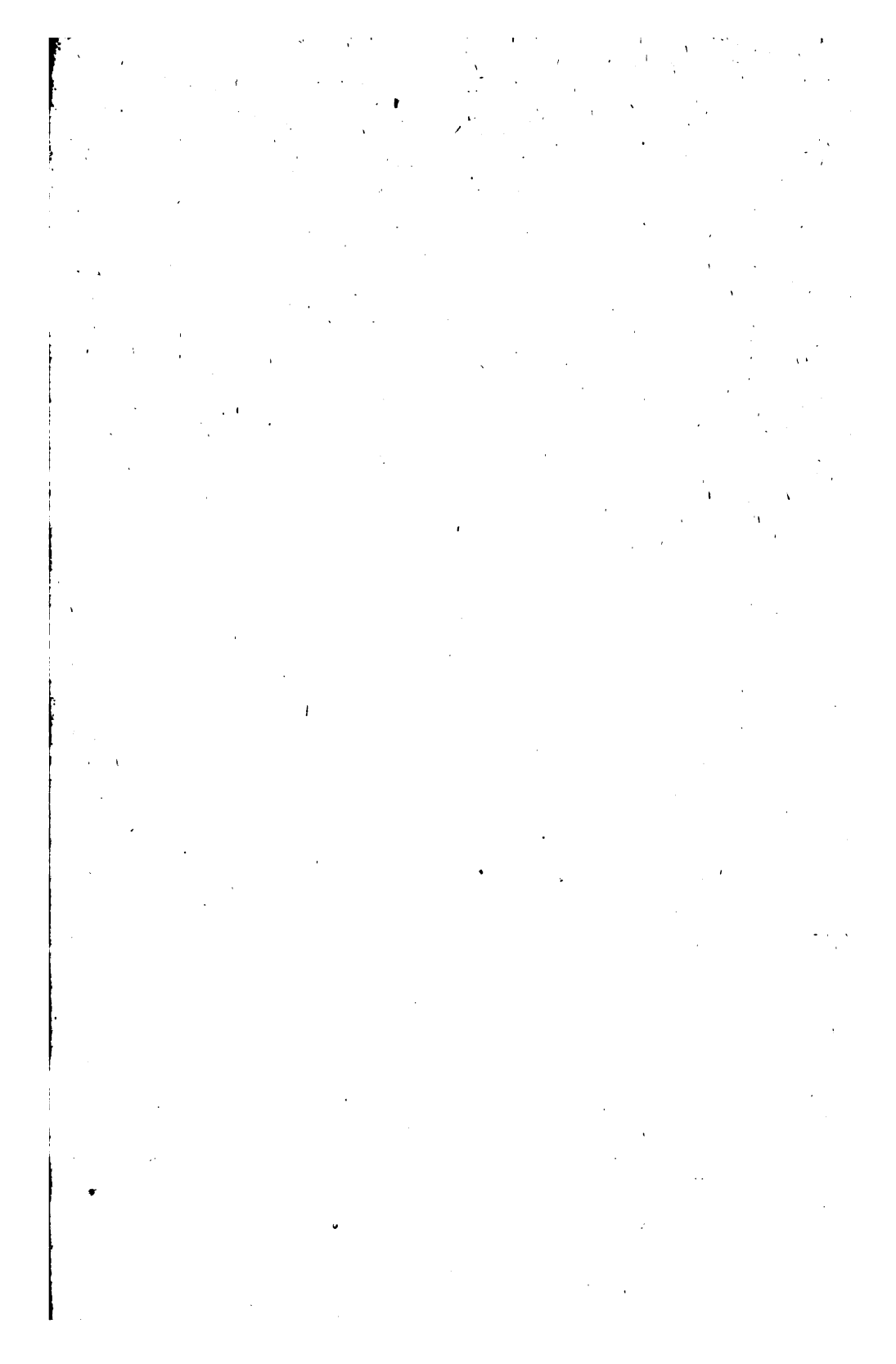
forceps. Those who imagine they have discovered a new and improved form of lever, and have enunciated a modern and novel doctrine as to the principles upon which it is to be used, will find on referring to the literature of the subject that their views on these points are really novelties only so far as they are sufficiently old to have fallen into oblivion and are now once more resuscitated for the benefit of modern readers. Those who maintain that no one is qualified to dogmatise upon the merits of the vectis unless he has had practical experience in its use in its alleged modern improved pattern and mode of application, have surely forgotten "*Ars longa, vita brevis est.*" To condemn every accoucheur to try every kind of mechanical contrivance even of his own day before venturing to form his opinion as to its adaptability to its purpose would certainly silence criticism in all but those whose span of life was unusually prolonged. It is probable that a busy practitioner might live a hundred years and more before he could find opportunity to test by a single trial each one of the varieties of forceps which has been extolled as superior to all its predecessors.

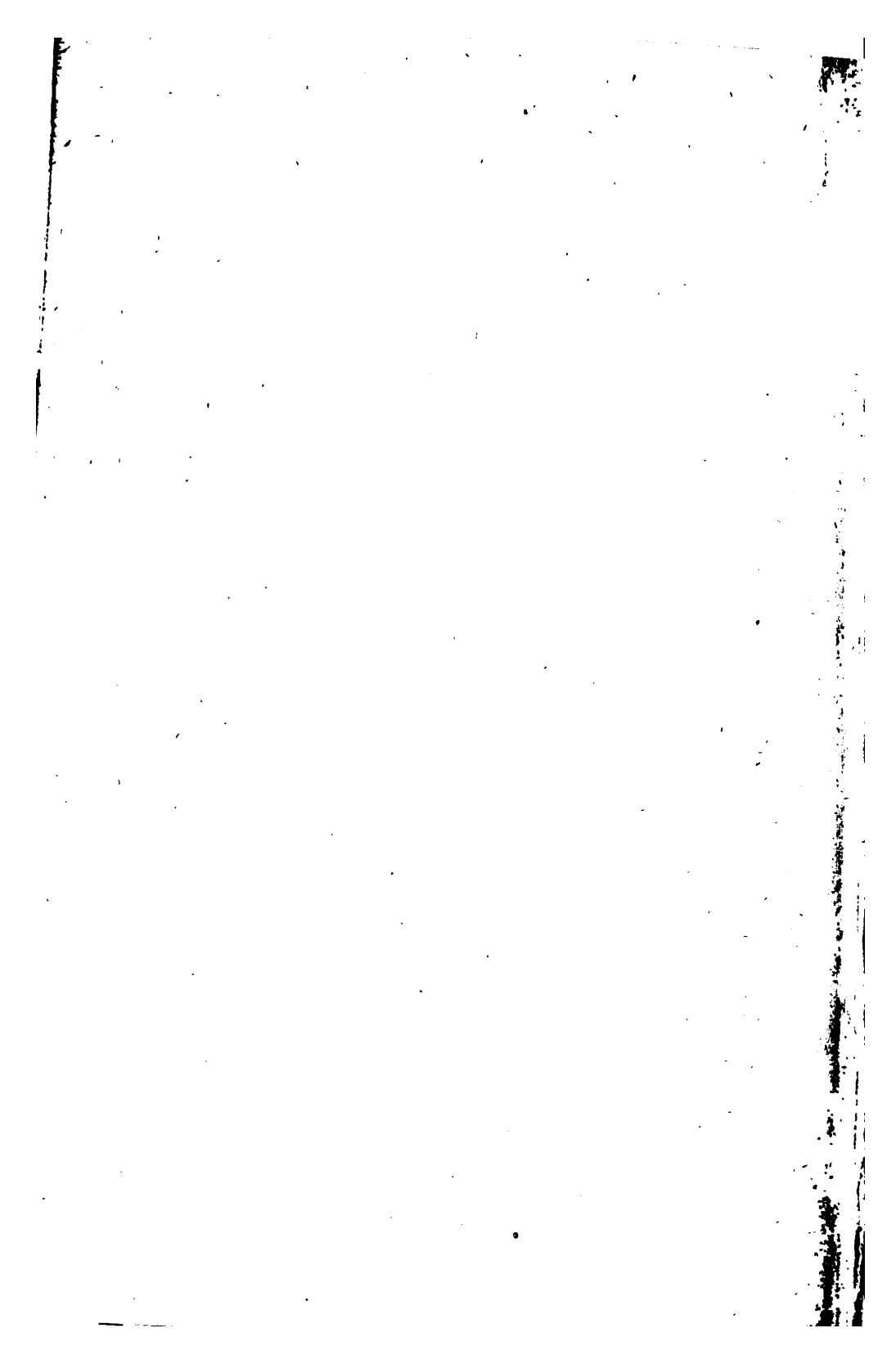












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